



# Abstract Reasoning

## UKCAT Course Book



**Theory & Technique**



**Mock Questions**



**Step-by-Step Guides**



**Detailed Explanations**

Motivate. Mentor. Maximise.

# **Abstract Reasoning Lessons**

Lesson 1: Introduction to Abstract Reasoning

Lesson 2: Abstract Reasoning Question Types

Lesson 3: Warm-Up Quiz

Lesson 4: Type 1 Questions

Lesson 5: Summary of Abstract Reasoning Patterns

Lesson 6: Abstract Reasoning Triggers

Lesson 7: Tutorial - Number Patterns

Lesson 8: Tutorial - Shape Patterns

Lesson 9: Tutorial - Size Patterns

Lesson 10: Tutorial - Position Patterns

Lesson 11: Tutorial - Colour Patterns

Lesson 12: Tutorial - Orientation Patterns

Lesson 13: Distractors

Lesson 14: Dependent Patterns

Lesson 15: Secondary Patterns

Lesson 16: Timing Strategies

Lesson 17: Type 2 Questions

Lesson 18: Type 3 Questions

Lesson 19: Type 4 Questions

Lesson 20: Abstract Reasoning - Test Day

Lesson 21: Tips from the Experts

Lesson 22: Summary & Overview

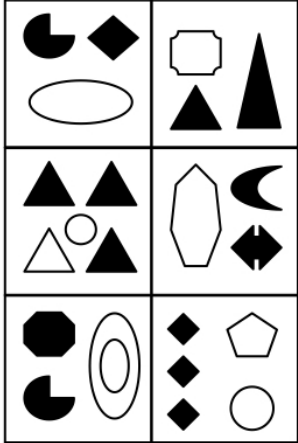
Answers and Explanations

### What is Abstract Reasoning?

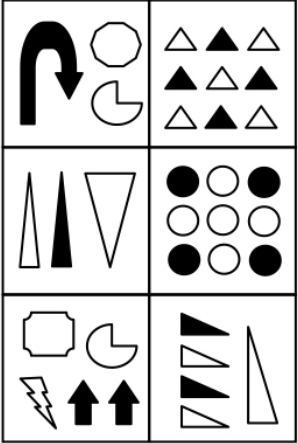
Abstract Reasoning assesses your ability to identify patterns amongst abstract shapes. The key is to focus on the patterns and similarities between shapes, ignoring the relevant and distracting material which may lead to incorrect conclusions.

#### Set 1 : Questions 1 - 5

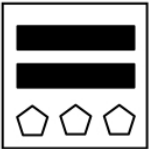
**SET A**



**SET B**




1



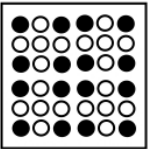
A. Set A  
B. Set B  
C. Neither

2



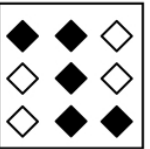
A. Set A  
B. Set B  
C. Neither

3



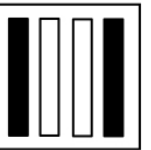
A. Set A  
B. Set B  
C. Neither

4



A. Set A  
B. Set B  
C. Neither

5



A. Set A  
B. Set B  
C. Neither

### Why do they test it?

When considering possible diagnoses, medical practitioners may be presented with a set of symptoms or results. Some information may be more reliable, more relevant and clearer than other information. Doctors and Dentists need to make judgements about such

information, identifying the information which will help them reach conclusions. Carrying out research involving data often involves identifying patterns in results in order to generate further hypotheses.

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## The Challenge of Abstract Reasoning

Many students find Abstract Reasoning the most difficult section at first. Here are some of the main difficulties of the section:

- The skill required is one rarely used by students at school.
  - Practice is essential to recognise common patterns, so at first the section is especially difficult
  - You have the least time per question out of any UKCAT section (13 minutes for 55 questions)
- 

## Abstract Reasoning: Do's and Don't's

Do	Don't
Begin by spotting the pattern in Set A and B before looking at the test shapes	Start with the Test Shapes
Look for patterns using similarities between boxes in Set A and B, and then using the pattern to answer the test shapes	Answer the test shapes by matching them to similar-looking boxes in Set A or B
Impose a limit of 1 minute per set, and then move on if you cannot get the answer	Spend too much time on a question

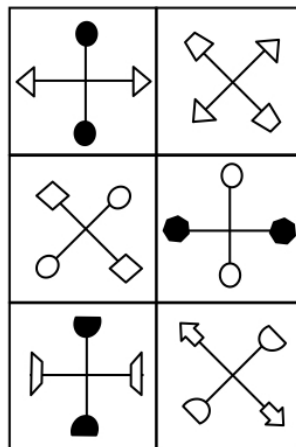
One thing to note is that when we refer to Box 1 in a Set, we mean the top left, Box 2 is the top right, Box 3 is the middle left, Box 4 is the middle right, and so on.

### Type 1 Questions

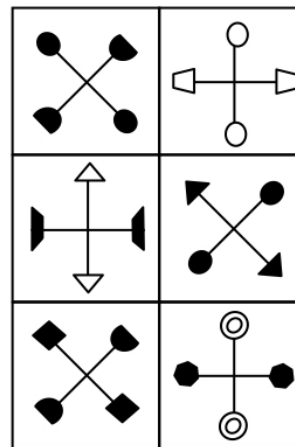
**Type 1 Questions** give you two sets of boxes containing shapes, with five associated test boxes. You have to find the pattern in Set A and B, and then choose A, B, or C for each test box.

#### Set 2 : Questions 6 - 10

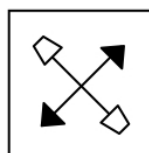
**SET A**



**SET B**

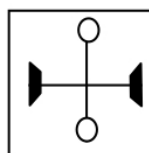


1



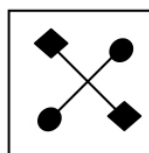
- A. Set A  
B. Set B  
C. Neither

2



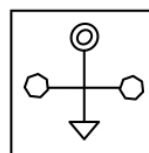
- A. Set A  
B. Set B  
C. Neither

3



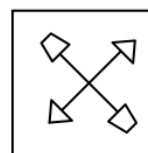
- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5



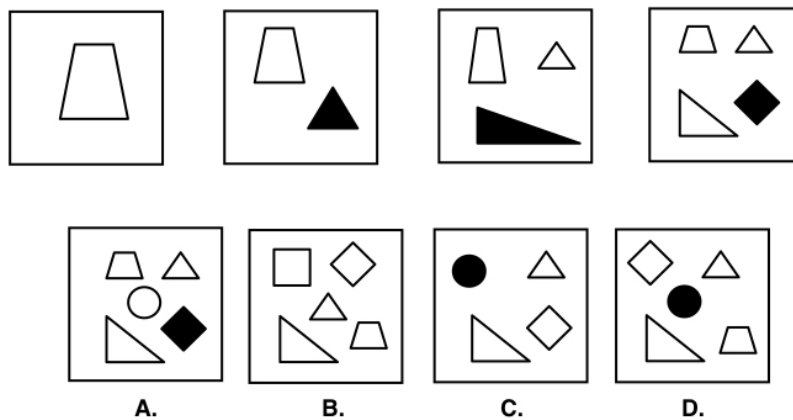
- A. Set A  
B. Set B  
C. Neither

## Type 2 Questions

**Type 2 Questions** will be present you with a series of shapes. You will be asked to select the next shape in the series.

### Set 3 : Question 11

Which of the following completes the sequence?

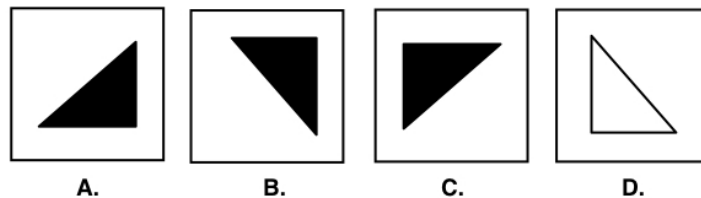
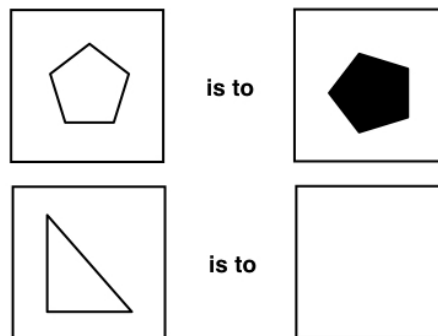


## Type 3 Questions

**Type 3 Questions** will present you with a statement involving a group of shapes. You will be asked to determine which shape completes the statement.

### Set 4 : Questions 12

Which of the following completes the sequence?

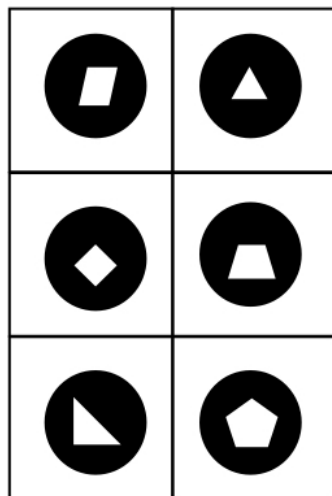


## Type 4 Questions

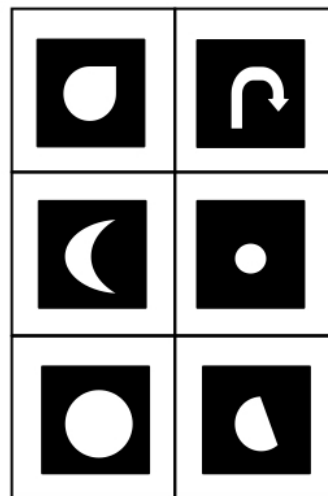
Type 4 Questions will present you with two sets of shapes labelled “Set A” and “Set B”. You will be asked to select which of the four response options belongs to Set A or Set B.

### Set 5 : Questions 13 - 15

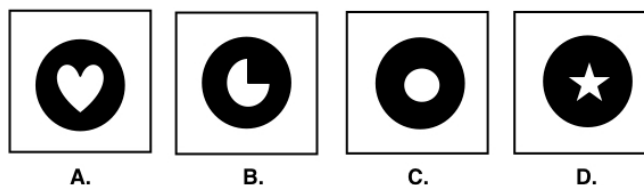
SET A



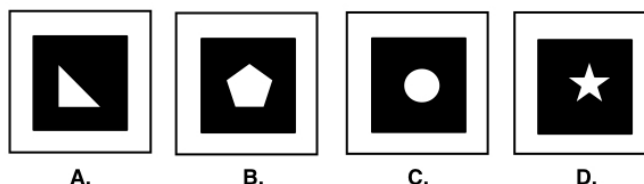
SET B



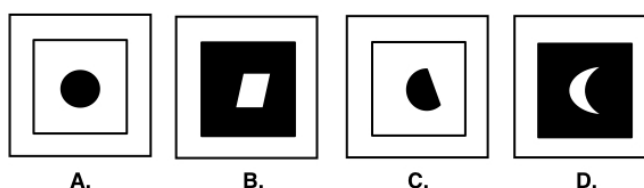
Which of the following fits into Set A?



Which of the following fits into Set B?



Which of the following fits into Set B?

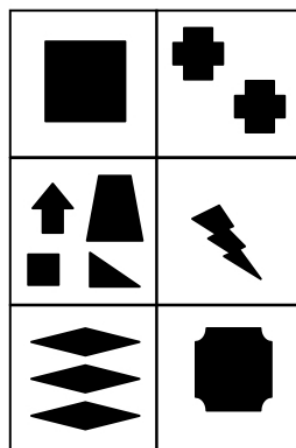




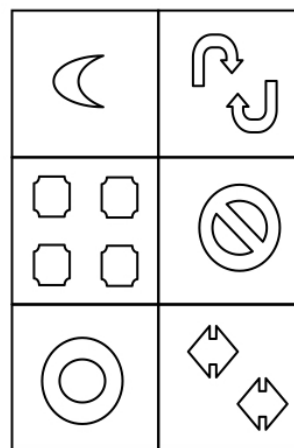
### Warm-Up Question 1

#### Set 6 : Questions 16 - 20

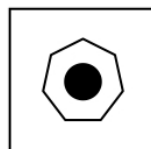
SET A



SET B

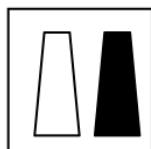


1



- A. Set A  
B. Set B  
C. Neither

2



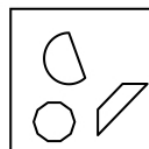
- A. Set A  
B. Set B  
C. Neither

3



- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5

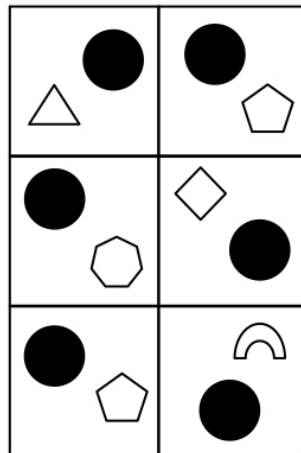


- A. Set A  
B. Set B  
C. Neither

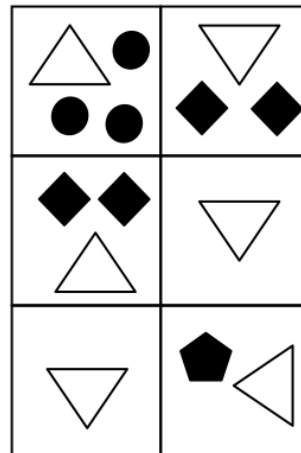
## Warm-Up Question 2

### Set 7 : Questions 21 - 25

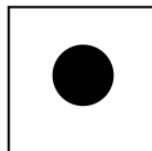
**SET A**



**SET B**

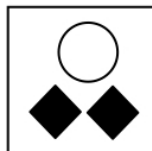


1



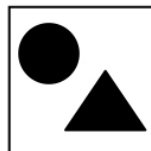
- A. Set A
- B. Set B
- C. Neither

2



- A. Set A
- B. Set B
- C. Neither

3



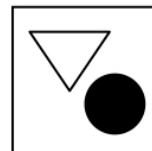
- A. Set A
- B. Set B
- C. Neither

4



- A. Set A
- B. Set B
- C. Neither

5

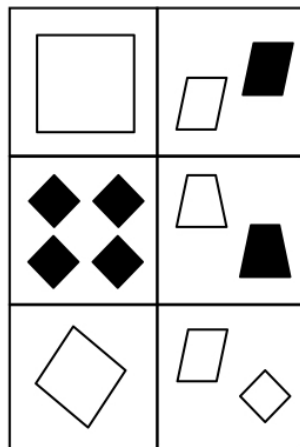


- A. Set A
- B. Set B
- C. Neither

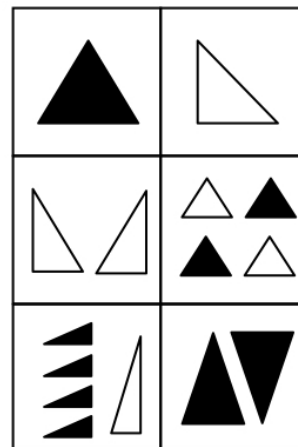
## Warm-Up Question 3

### Set 8 : Questions 26 - 30

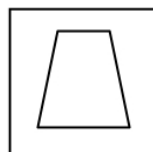
SET A



SET B



1



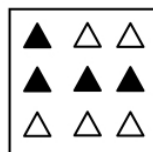
- A. Set A  
B. Set B  
C. Neither

2



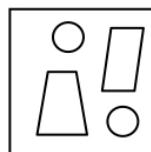
- A. Set A  
B. Set B  
C. Neither

3



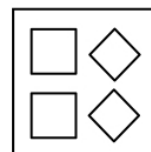
- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5

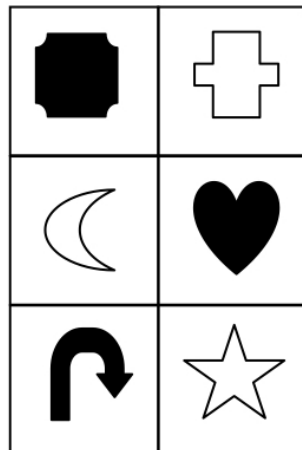


- A. Set A  
B. Set B  
C. Neither

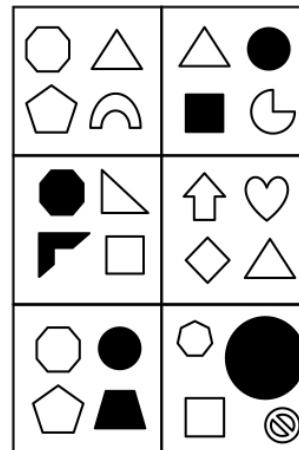
## Warm-Up Question 4

### Set 9 : Questions 31 - 35

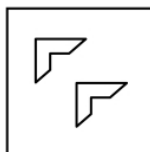
SET A



SET B

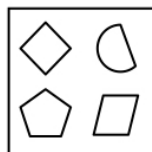


1



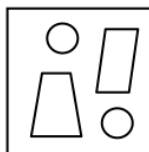
- A. Set A  
B. Set B  
C. Neither

2



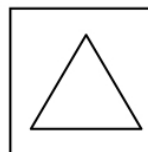
- A. Set A  
B. Set B  
C. Neither

3



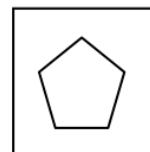
- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5



- A. Set A  
B. Set B  
C. Neither

### How do you spot the patterns?

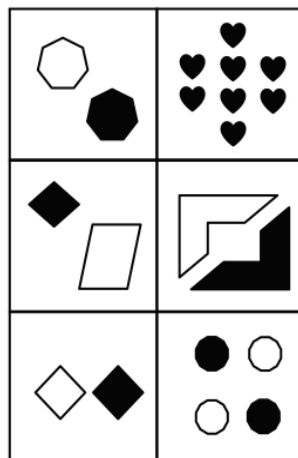
The most common type of question you will face is Type 1. In these questions, you get given two sets, each with their own pattern and associated test boxes.

In the following lessons we will go through how to spot the patterns using various techniques and triggers. Here are some things to bear in mind:

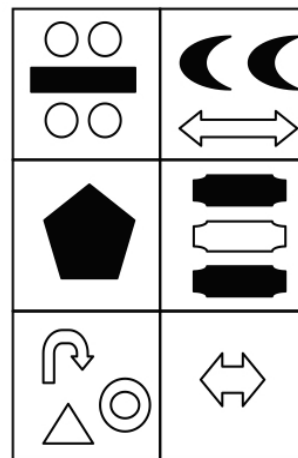
- The pattern in Set A will tend to be the inverse of the pattern in Set B. For example, if Set A has an even number of shapes per box, Set B might have an odd number of shapes.
- Each set will have 6 boxes. The pattern in a set **must apply to every single box**.

### Set 10 : Questions 36 - 40

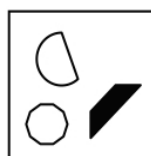
SET A



SET B

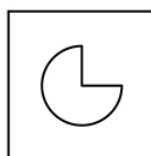


1



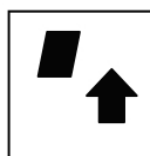
- A. Set A  
B. Set B  
C. Neither

2



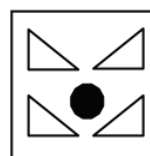
- A. Set A  
B. Set B  
C. Neither

3



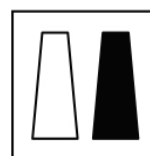
- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5



- A. Set A  
B. Set B  
C. Neither

## How do you answer the test shapes?

- The answer is A if the test shape is an exact fit to Set A, but does not fit into Set B
  - The answer is B if the test shape is an exact fit to Set B, but does not fit into Set A
  - The answer is C if the test shape fits into neither A or B, or it fits into both.
- 

## Medic Mind Method

- 1) Ignore the test boxes
  - 2) Identify the simplest box in Set A and compare with either:
    - The simplest box in Set B
    - Another simple box in Set A
  - 3) Identify the pattern in Set A and Set B by applying SPONCS
  - 4) Confirm that the patterns work for every box in each set.
  - 5) Answer the test questions
- 

## A Closer Look At Step 2

Begin by looking for the pattern in Set A using the two simplest Set A boxes. Use the boxes in Set B as a reference to check and look for trends.

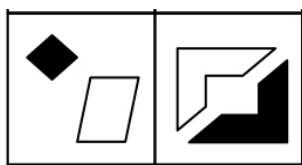
Let's walk through two ways you could have approached **Set 2** on the previous page:

### 1. Looking for Set A and then Set B

For most questions, it is better to spot the pattern in A and then look for the pattern in B. You look for the **similarities** between Set A boxes first. For example:

- If each box in Set A has at least one triangle and one star, then you will only spot this by comparing several Set A boxes
- If each box in Set A has one more white shape than black shape, again you will only spot this by comparing several Set A boxes.

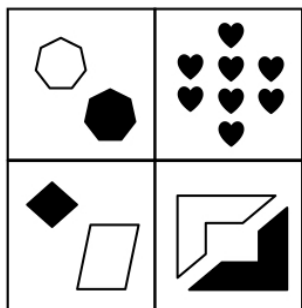
STEP 1



Comparing two Set A boxes

- **Colour**- Both have one black shape and one white shape
- **Number**- Both have two shapes
- **Shape**- Both have straight sided shapes

STEP 2



Comparing four Set A boxes

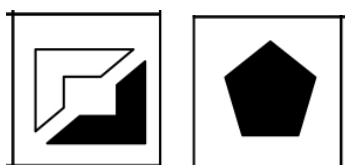
- Colour
- **Number**- All have an even number of shapes
- Shapes

## 2. Looking for Set A and Set B together

For other questions, it is better to compare boxes in A and B from the start to spot the patterns in both. You look for the **differences** between Set A and Set B boxes first. For example:

- If Set A has right-angled triangles, but Set B has isosceles triangles, then it may be easier to spot this by comparing from the start.
- If Set A has an even number of shapes, but Set B has an odd number of shapes, again it may be easier to spot this by comparing from the start.

STEP 1



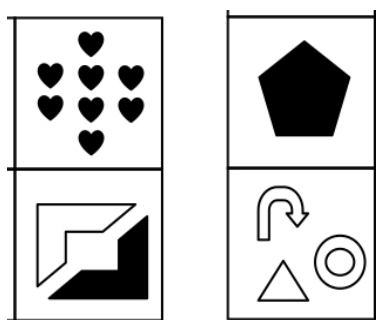
Set A

Set B

Comparing one Set A and one Set B box

- **Colour**- A has one black, one white. B has one black.
- **Number**- A has 2 shapes, B has 1 shape.

STEP 2



Set A

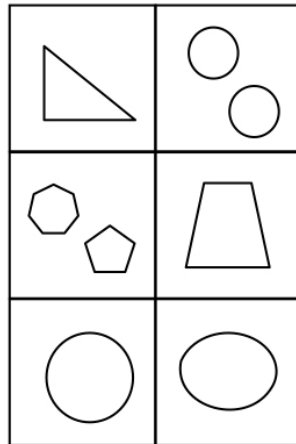
Set B

Comparing two Set A and two Set B boxes

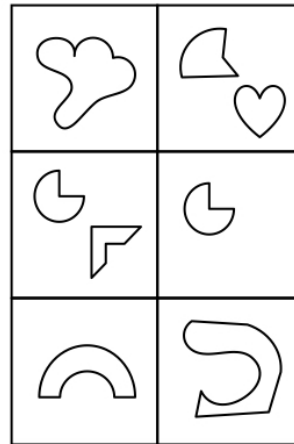
- Colour
- **Number**- A has an even number of shapes. B has an odd




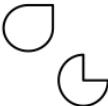

## Set 11 : Questions 41 - 45

**SET A**



**SET B**



- |   |   |   |  |   |
|---|---|---|--|---|
| 1   | 2   | 3   | 4  | 5   |
|  |  |  |  |  |
| A. Set A<br>B. Set B<br>C. Neither  | A. Set A<br>B. Set B<br>C. Neither  | A. Set A<br>B. Set B<br>C. Neither  | A. Set A<br>B. Set B<br>C. Neither   | A. Set A<br>B. Set B<br>C. Neither  |





# Common Patterns: SPONCS

## LESSON 5

All patterns will come under the Medic Mind Acronym: SPONCS

**S**hape      **P**osition      **O**rientation      **N**umber      **C**olour      **S**ize

Category	Pattern	Example
Shape	Each box has a particular shape	Set A has one triangle in each box.
	Each box has a particular characteristic to its shapes: <ul style="list-style-type: none"><li>• Symmetrical vs. Asymmetrical</li><li>• Curved vs. Straight</li><li>• Concave vs. Convex</li><li>• Right vs. Acute Angles</li><li>• Regular vs. Irregular</li><li>• x-sided vs. y-sided</li></ul>	Set A has symmetrical shapes.  Set B has asymmetrical shapes.
Position	Each box can be split into sections (left, right, top, bottom)	Set A has more shapes on the left hand side than right hand side
	Each box has certain shapes arranged relatively to each other	Set A has a triangle and square adjacent in every box.
	Each box has rotated shapes	Set A has a shape and adjacent to it the same shape rotated 90 degrees clockwise
	Each box has shapes arranged by feature (colour, size, number of sides)	Set A has the biggest shape in the top half of each box.

	Each box has a shape arranged in a specific way relative to another	Set A has a triangle to the left of a circle in each box.
<b>Number</b>	Each box has a specific number of all shapes	Set A has two shapes in each box.
	Each box has a specific number of a particular or coloured shape	Set A has two black triangles in each box.
	Each box has an odd or even number of shapes	Set A has an even number of shapes.
	Each box has a particular number of a feature: <ul style="list-style-type: none"> <li>• Intersections</li> <li>• Regions</li> <li>• Sides</li> <li>• Right Angles</li> <li>• Regions</li> </ul>	Set A has shapes with an even number of sides.
<b>Orientation</b>	Each box has an arrow pointing in a particular direction	Set A has more arrows pointing right than left.
	Each box has a triangle pointing in a particular direction	Set A has a triangle pointing to a black shape in each box.
<b>Colour</b>	Each box has shapes of a certain colour (black, white, grey, spotted, striped)	Set A has only black shapes.
	Each box has a certain number of colours	Set A has twice as many black shapes as white shapes.
	Each box has a particular shape coloured	Set A has a black triangle in each box.
<b>Size</b>	Each box has a big or small shape in a particular orientation	Set A has the biggest shape in the top half of each box.
	Each box has a big or small shape of a particular feature	Set A has the biggest shape shaded black in each box.



### What are the triggers for Abstract Reasoning?

When doing Abstract Reasoning questions, you want to look for one of the patterns from SPONCS. However, do not mindlessly apply SPONCS in the same way for every question type.

Instead, you should look for the pattern type based on certain triggers:

#### Shape

- If you see peculiar shapes, such as the crescent moon, think of the **SHAPE** pattern of 'Curved vs. Straight'. This is because to represent curved shapes they cannot always use a circle, so then start to make new curved shapes such as the crescent moon.

#### Position

- If you see clocks, don't read them as telling the time. They are just shapes- instead think about the **ANGLES** between the clock hands.

#### Orientation

- If you see lots of similar shapes in every box, think of **ORIENTATION**. There may be subtle differences in arrangement 'e.g. in Set A the triangle is always above the square, and vice versa in Set B'.
- If you see lots of triangles, think about **ORIENTATION** as triangles can point, and also about **ANGLES** as some may be right angled and some isosceles.
- If you see arrows, think about **ORIENTATION** as they are often pointing in a direction or at a particular shape (e.g. in Set A the arrow always points to a right angled shape).

#### Number

- If you see very few shapes, think of **NUMBER**. If there are many shapes, it is not worth your time counting.

## Colour

- If you see grey, spotted or dotted shapes, consider **COLOUR** as the pattern.

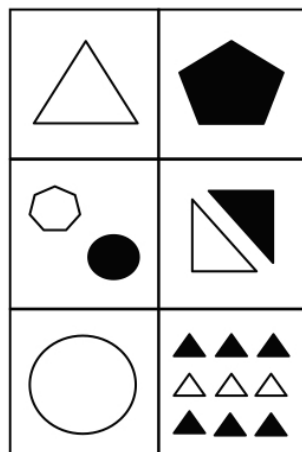
## Size

- If you see big and small shapes in the same box, consider **SIZE** as the pattern.

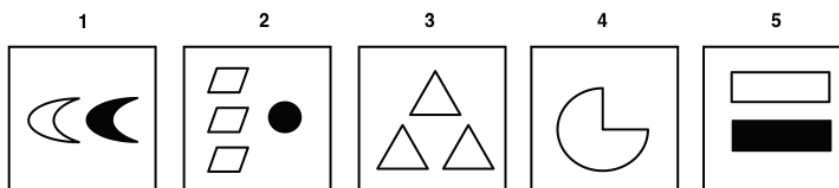
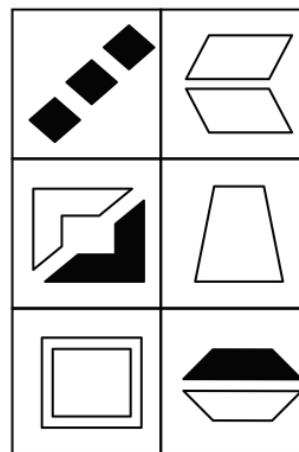
Number Patterns	
Each box has a specific number of all shapes	Set A has two shapes in each box.
Each box has a specific number of a particular or coloured shape	Set A has two black triangles in each box.
Each box has an odd or even number of shapes	Set A has an even number of shapes.
Each box has a particular number of a feature: <ul style="list-style-type: none"> <li>• Intersections</li> <li>• Regions</li> <li>• Sides</li> <li>• Right Angles</li> <li>• Regions</li> </ul>	Set A has shapes with an even number of sides.

### Set 12 : Questions 46 - 50

**SET A**



**SET B**



A. Set A  
B. Set B  
C. Neither

A. Set A  
B. Set B  
C. Neither

A. Set A  
B. Set B  
C. Neither

A. Set A  
B. Set B  
C. Neither

A. Set A  
B. Set B  
C. Neither

## Counting Shapes

When considering number patterns, there are two elements- the 'quantity' being considered, and the 'characteristic' you are looking at.

### Quantity

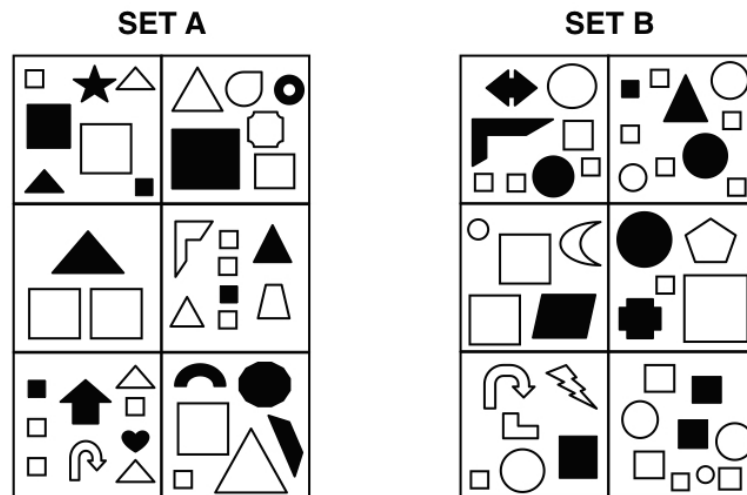
- **Specific number-** e.g. 3 shapes in each box
- **Odd and even number-** e.g. even number of shapes in each box
- **Relative number-** e.g. more triangles than circles
- **Multiples-** e.g. double the number of black than white

### Characteristics

Number patterns can couple with any other category. For example:

- **Shape** - Set A has two triangles in each box
- **Colour** - Set A has three black shapes in each box
- **Position** - Set A has more shapes on the left than right
- **Sides** - Set A has two sided shapes only

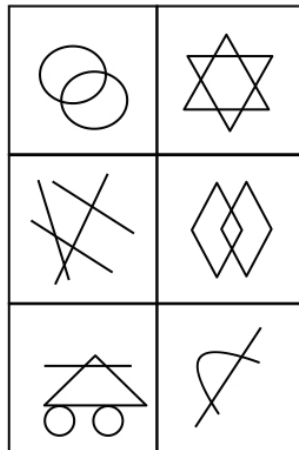
### Set 13 : Questions 51 - 55



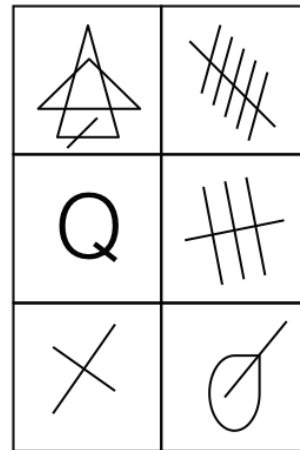
1	2	3	4	5
A. Set A B. Set B C. Neither	A. Set A B. Set B C. Neither	A. Set A B. Set B C. Neither	A. Set A B. Set B C. Neither	A. Set A B. Set B C. Neither

## Set 14 : Questions 56 - 60

**SET A**



**SET B**

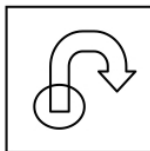


1



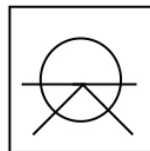
- A. Set A  
B. Set B  
C. Neither

2



- A. Set A  
B. Set B  
C. Neither

3



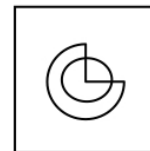
- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

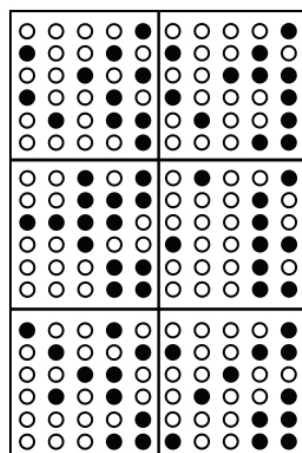
5



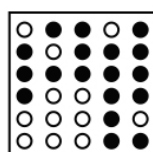
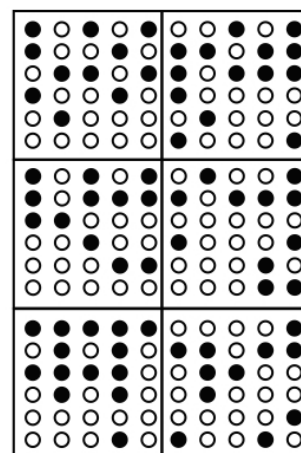
- A. Set A  
B. Set B  
C. Neither

## Set 15 : Questions 61 - 65

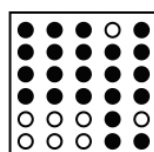
**SET A**



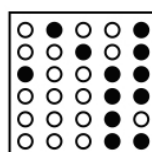
**SET B**



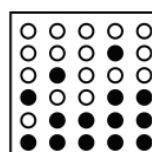
- A. Set A  
B. Set B  
C. Neither



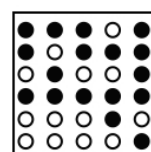
- A. Set A  
B. Set B  
C. Neither



- A. Set A  
B. Set B  
C. Neither



- A. Set A  
B. Set B  
C. Neither



- A. Set A  
B. Set B  
C. Neither

## The Trap of Counting

Many UKCAT candidates fall into the trap of counting the **number** or **sides** of shapes for every question. However, it can often be very time consuming to do this, so you should only count when you see sets with a **small number of shapes**.

From our UKCAT research, patterns relating to the number of shapes or sides tend not to have more than 6 or so shapes in each box.

**Think!** If you counted for every single pattern, you would at least spend 15 seconds per question. You are meant to spot the pattern in 30 seconds, so this is half your pattern spotting time for the whole section, for only 1 or 2 number patterns.

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## Intersections and Segments

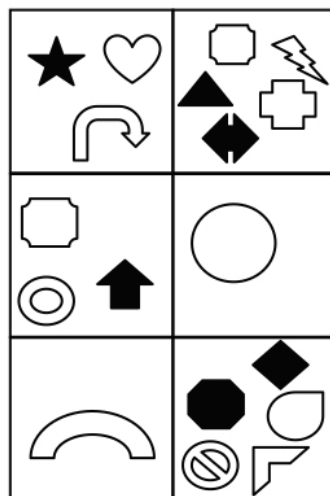
When you see several lines or overlapping regions, you should be on alert for a pattern relating to the number of **intersections** or **regions** created.



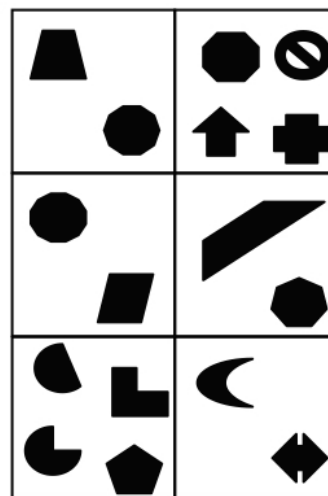
Shape Patterns	
Each box has a particular shape	Set A has one triangle in each box.
Each box has a particular characteristic to its shapes <ul style="list-style-type: none"> <li>Symmetrical vs. Asymmetrical</li> <li>Curved vs. Straight</li> <li>Concave vs. Convex</li> <li>Right vs. Acute Angles</li> <li>Regular vs. Irregular</li> <li>x-sided vs. y-sided</li> </ul>	Set A has symmetrical shapes.  Set B has asymmetrical shapes.

### Set 16 : Questions 66 - 70

**SET A**



**SET B**

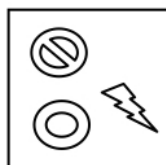


1



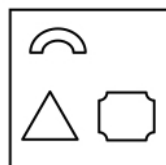
- A. Set A  
B. Set B  
C. Neither

2



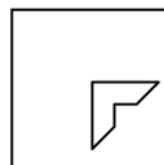
- A. Set A  
B. Set B  
C. Neither

3



- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5



- A. Set A  
B. Set B  
C. Neither

## Taking A Step Back

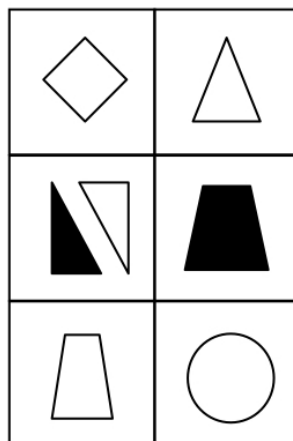
Sometimes you should take a step back and look at the sets as a whole, rather than fixating on one particular box. By doing this, you can spot general differences in the nature of the shapes.

For example, symmetrical shapes look distinctly more neat and regular than asymmetrical shapes, so one would hope that you could spot this by looking at the sets as a whole. The same applies for the other possible shape patterns:

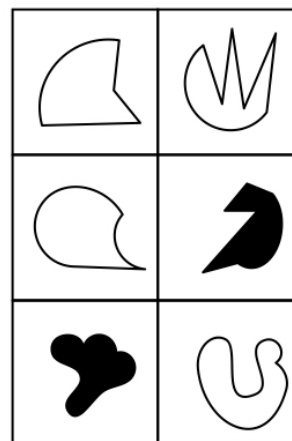
- Symmetrical vs Asymmetrical
- Curved vs. Straight Shapes
- Concave vs. Convex Shapes
- Right vs. Acute Angles
- Regular vs. Irregular
- x-sided vs. y-sided

### Set 17 : Questions 71 - 75

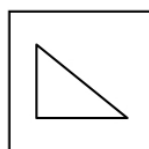
**SET A**



**SET B**



1



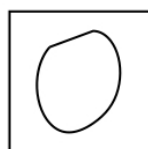
- A. Set A  
B. Set B  
C. Neither

2



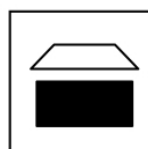
- A. Set A  
B. Set B  
C. Neither

3



- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

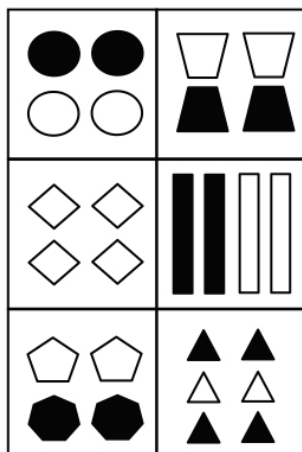
5



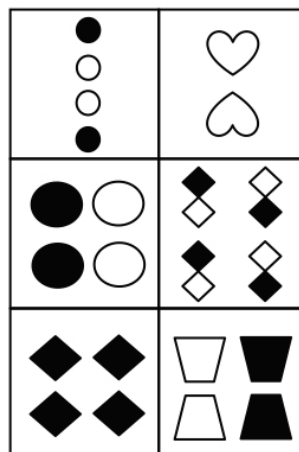
- A. Set A  
B. Set B  
C. Neither

## Set 18 : Questions 76 - 80

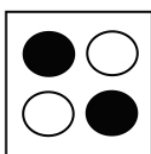
**SET A**



**SET B**

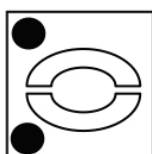


1



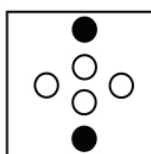
- A. Set A  
B. Set B  
C. Neither

2



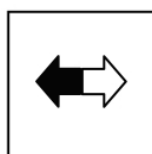
- A. Set A  
B. Set B  
C. Neither

3



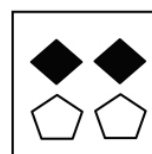
- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5



- A. Set A  
B. Set B  
C. Neither

## Number of sides

The patterns about the number of sides can be tricky for two reasons.

Firstly, it can be difficult to know when to count the number of sides, because it is too time-consuming to do it for every question. Here are some tips:

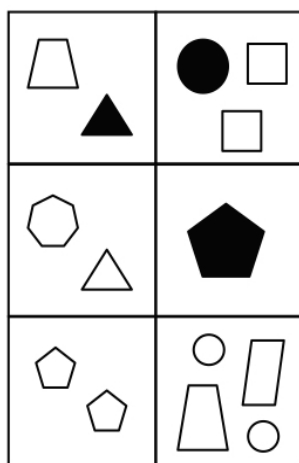
- Count sides when there are only a few shapes
- Bear in mind that a circle has one side
- Memorise the number of sides of common shapes (e.g. a star has 10 sides, arrow has 7 sides, plus has 12 sides)

Secondly, it is not always as simple as having x-sides in Set A, and y-sides in Set B. For example:

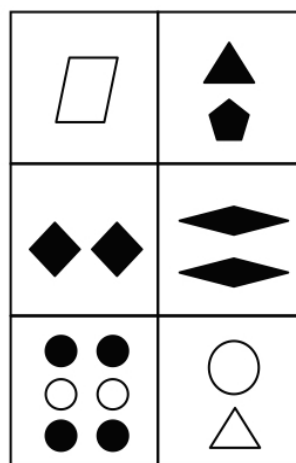
- **Odd / Even** - In Set A there are an odd number of sides, in Set B there is an even number
- **Relative** - In Set A the number of sides is one more than the number of black shapes, but in Set B it is one more than the number of white shapes
- **Multiples** - In Set A there are 10 sides but the black shape sides count as double. In Set B there are 10 sides but the white shape sides count as double.

### Set 19 : Questions 81 - 85

SET A



SET B

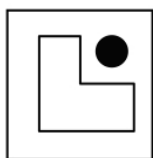


1



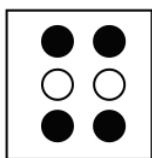
- A. Set A  
B. Set B  
C. Neither

2



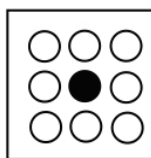
- A. Set A  
B. Set B  
C. Neither

3



- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

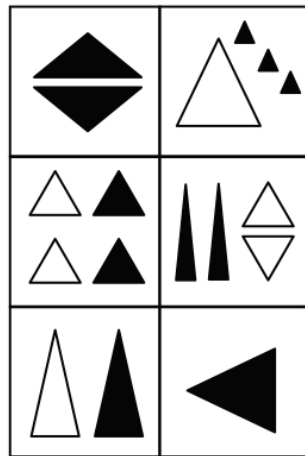
5



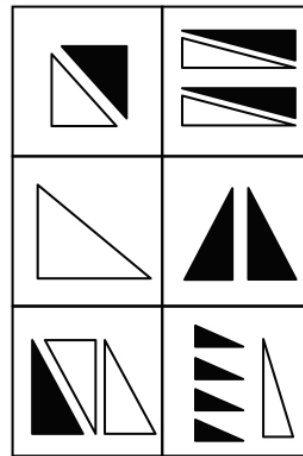
- A. Set A  
B. Set B  
C. Neither

## Set 20 : Questions 86 - 90

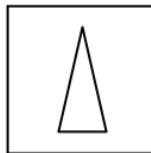
**SET A**



**SET B**



1



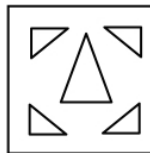
- A. Set A  
B. Set B  
C. Neither

2



- A. Set A  
B. Set B  
C. Neither

3



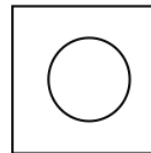
- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

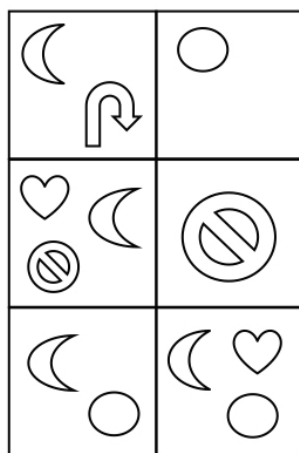
5



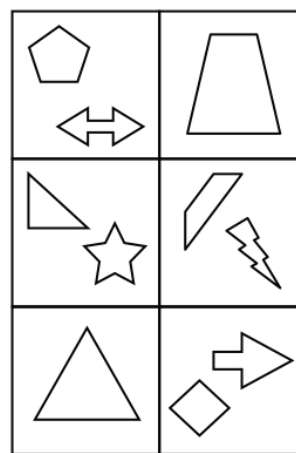
- A. Set A  
B. Set B  
C. Neither

## Set 21 : Questions 91 - 95

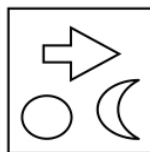
**SET A**



**SET B**

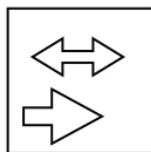


1



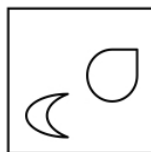
- A. Set A  
B. Set B  
C. Neither

2



- A. Set A  
B. Set B  
C. Neither

3



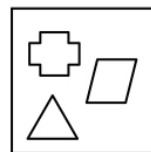
- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5



- A. Set A  
B. Set B  
C. Neither

# Triangles

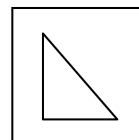
When you see many triangles, you should be on alert for two patterns:

1. **Orientation**- pattern related to the direction the triangle points
2. **Shape**- Isosceles vs. Right Angled Triangle

We will look closer at pattern 1 in the 'Orientation Patterns' section.

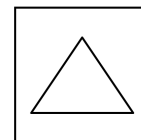
Pattern 2 is a common pattern which, from our research, has come up regularly in the UKCAT for the past few years. Surprisingly, year on year it continues to trick candidates out, so be on the look out for it if you see two sets full of triangles.

**Right-Angled**



vs.

**Isosceles**



---

## Curved vs. Straight Side

A common pattern is for one set to have **curved** edged shapes, and the other set to have **straight** edged shapes.

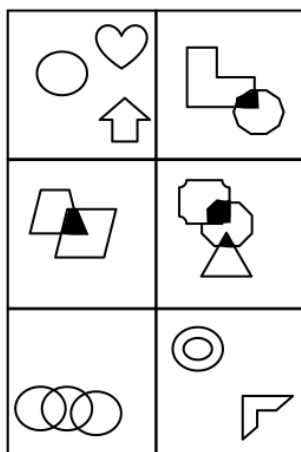
To spot this, you need to look at sets as a whole rather than concentrating on a specific box. Additionally, look out for specific shapes:

- If you see many circles, then consider a curved shape pattern
- If you see unusual shapes, such as the crescent moon, it is also a sign that it could be a curved shape pattern. Often the UKCAT question writers struggle to find a big enough variety of curved shapes, so they have to resort to shapes such as the crescent moon.

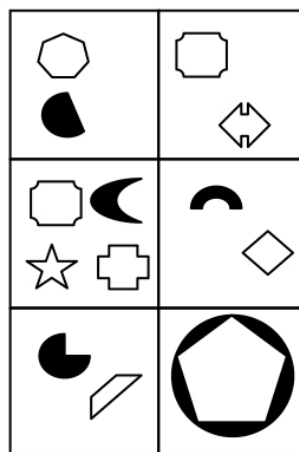
On the next page we will try an example.

## Set 22 : Questions 96 - 100

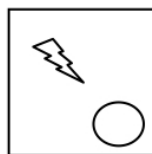
**SET A**



**SET B**

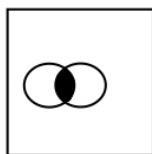


1



- A. Set A  
B. Set B  
C. Neither

2



- A. Set A  
B. Set B  
C. Neither

3



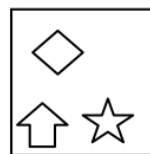
- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5



- A. Set A  
B. Set B  
C. Neither

### Size Patterns

Each box has a big or small shape in a particular orientation

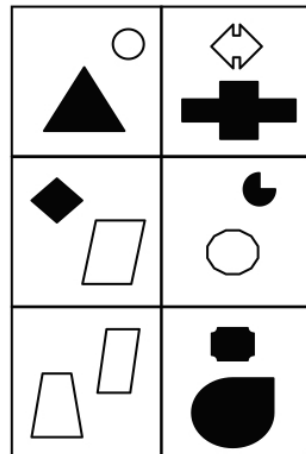
Set A has the biggest shape in the top half of each box.

Each box has a big or small shape of a particular feature

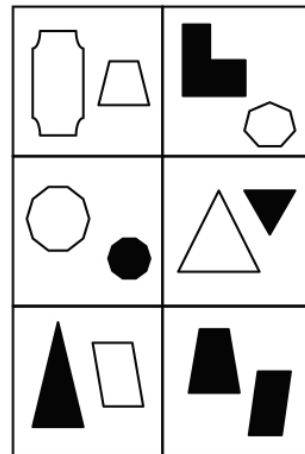
Set A has the biggest shape shaded black in each box.

### Set 23 : Questions 101 - 105

**SET A**



**SET B**

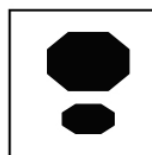


1



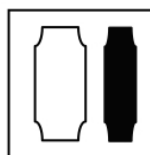
- A. Set A
- B. Set B
- C. Neither

2



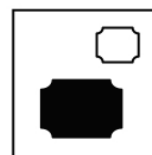
- A. Set A
- B. Set B
- C. Neither

3



- A. Set A
- B. Set B
- C. Neither

4



- A. Set A
- B. Set B
- C. Neither

5



- A. Set A
- B. Set B
- C. Neither



## Triggers for Size Patterns

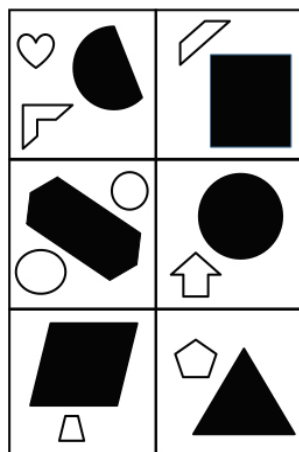
Many size patterns will give you a trigger by having very big shapes next to very small shapes in certain boxes. Examples of patterns include:

- The big shape is above the small shape
- The big shape is white, the small shape is black

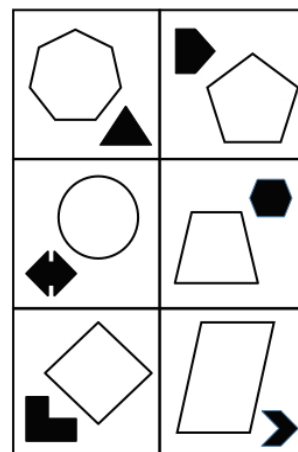
In 5 out of the 6 boxes the big shape may only be slightly bigger than the small one, so it can be difficult to spot. Therefore when you spot one box with a very big and small shape, you should be triggered to look for a Size Pattern.

### Set 24 : Questions 106 - 110

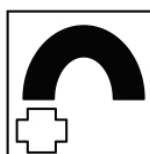
SET A



SET B

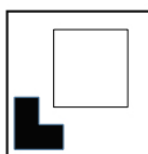


1



- A. Set A  
B. Set B  
C. Neither

2



- A. Set A  
B. Set B  
C. Neither

3



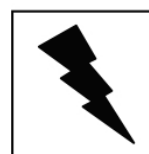
- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5



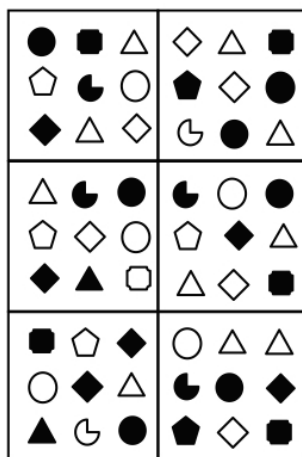
- A. Set A  
B. Set B  
C. Neither

## Position Patterns

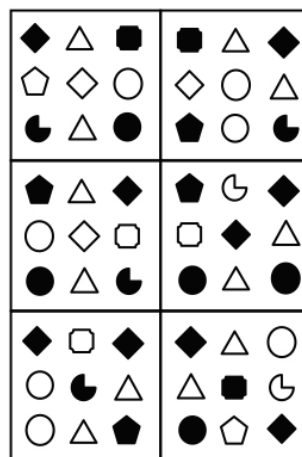
Each box can be split into sections (left, right, top, bottom)	Set A has more shapes on the left hand side than right hand side
Each box has certain shapes arranged relatively to each other	Set A has a triangle and square adjacent in every box.
Each box has rotated shapes	Set A has a shape and adjacent to it the same shape rotated 90 degrees clockwise
Each box has shapes arranged by feature (colour, size, number of sides)	Set A has the biggest shape in the top half of each box.
Each box has a shape arranged in a specific way relative to another	Set A has a triangle to the left of a circle in each box.

## Set 25 : Questions 111 - 115

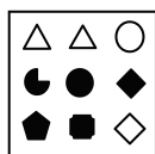
**SET A**



## SET B

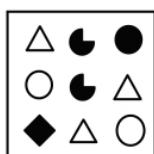


1



- A. Set A  
B. Set B  
C. Neither

2



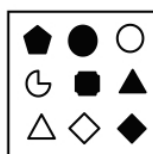
- A. Set A  
B. Set B  
C. Neither

3



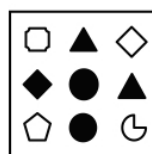
- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5



- A. Set A  
B. Set B  
C. Neither

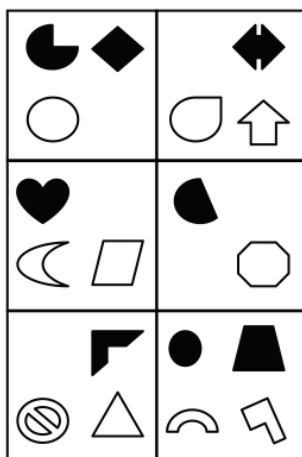
## Triggers for Position Patterns

Position patterns can often be hard to spot when looking at a specific box. Therefore, like shape patterns, they require you to take a step back and look at the set as a whole.

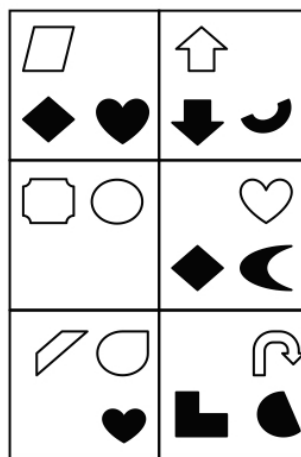
When you see lots of **similar shapes** in every box, look at how the shapes are positioned relatively to each other. For example, if every box has 9 shapes full of circles, triangles and squares, it may be the case that there is always a circle and triangle next to each other.

### Set 26 : Questions 116 - 120

SET A



SET B

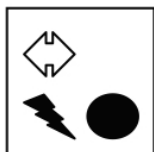


1



- A. Set A
- B. Set B
- C. Neither

2



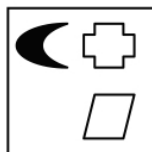
- A. Set A
- B. Set B
- C. Neither

3



- A. Set A
- B. Set B
- C. Neither

4



- A. Set A
- B. Set B
- C. Neither

5

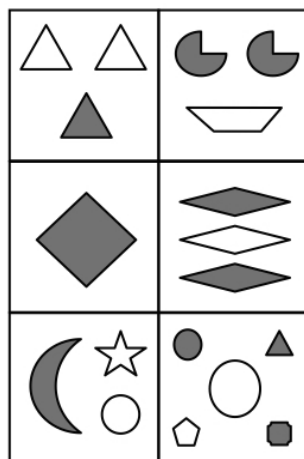


- A. Set A
- B. Set B
- C. Neither

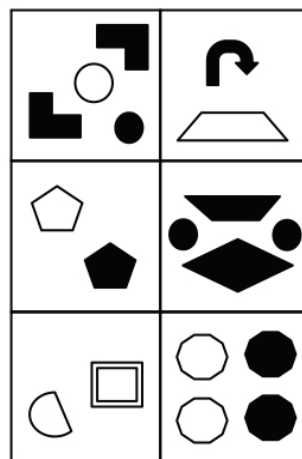
Colour Patterns	
Each box has shapes of a certain colour (black, white, grey, spotted, striped)	Set A has only black shapes.
Each box has a certain number of colours	Set A has twice as many black shapes as white shapes.
Each box has a particular shape coloured	Set A has a black triangle in each box.

### Set 27 : Questions 121 - 125

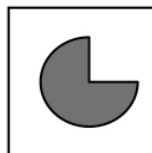
**SET A**



**SET B**



1



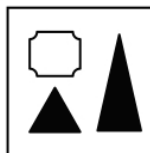
- A. Set A  
B. Set B  
C. Neither

2



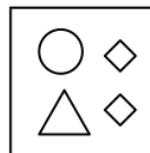
- A. Set A  
B. Set B  
C. Neither

3



- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5



- A. Set A  
B. Set B  
C. Neither

## Black and White

From UKCAT trends, colour has been the pattern most often combined with other patterns such as Shape, Number or Position. For example:

- Set A has two black shapes per box, Set B has two white shapes per box
- In Set A the triangles are black, in Set B the triangles are white

<b>Set 28 : Questions 126 - 130</b>																								
<b>SET A</b>					<b>SET B</b>																			
A. Set A B. Set B C. Neither					A. Set A B. Set B C. Neither					A. Set A B. Set B C. Neither					A. Set A B. Set B C. Neither					A. Set A B. Set B C. Neither				

## Spotted, Striped and Grey

The UKCAT only uses black, white and grey as colours. Grey is very rarely used, so when you see it appear you should be on alert for Colour Patterns. The same applies for striped and dotted patterns, which also appear rarely.

With stripes, bear in mind that they can point in a certain direction. For example, Set A might have stripes going up and right, and Set B stripes going up and left.

### Orientation Patterns

Each box has an arrow pointing in a particular direction

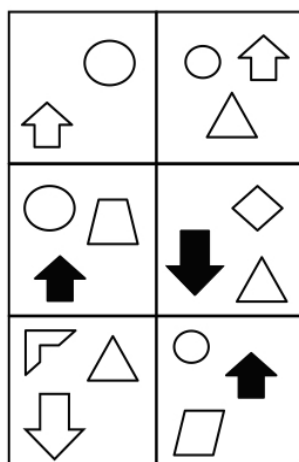
Set A has more arrows pointing right than left.

Each box has a triangle pointing in a particular direction

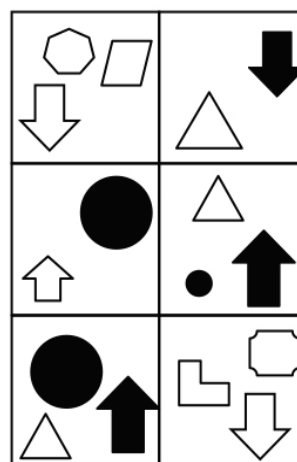
Set A has a triangle always pointing to a black shape in each box.

### Set 29 : Questions 131 - 135

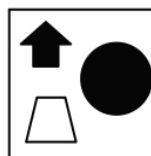
#### SET A



#### SET B

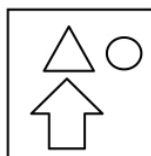


1



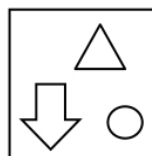
- A. Set A  
B. Set B  
C. Neither

2



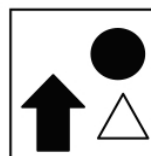
- A. Set A  
B. Set B  
C. Neither

3



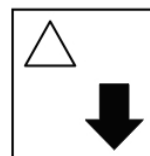
- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5



- A. Set A  
B. Set B  
C. Neither

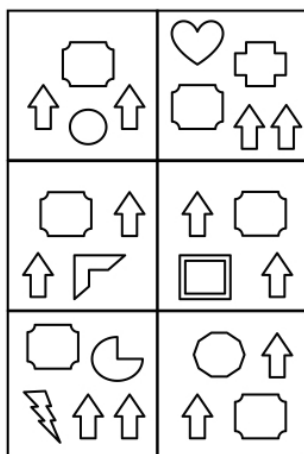
## Arrows

When you see arrows, your first instinct should be to look for an Orientation Pattern.

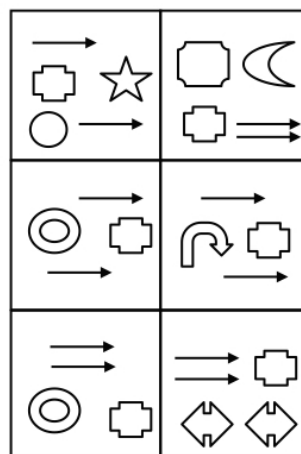
- The pattern may involve the direction the arrows point - e.g. left, right, up, down.
- The pattern may involve the arrow pointing to a particular shape - e.g. the arrow always points to a triangle in Set A, but a circle in Set B

### Set 30 : Questions 136 - 140

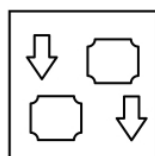
**SET A**



**SET B**

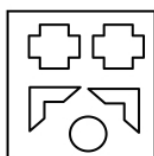


1



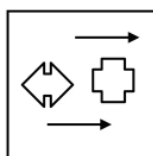
- A. Set A  
B. Set B  
C. Neither

2



- A. Set A  
B. Set B  
C. Neither

3



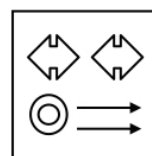
- A. Set A  
B. Set B  
C. Neither

4



- A. Set A  
B. Set B  
C. Neither

5



- A. Set A  
B. Set B  
C. Neither

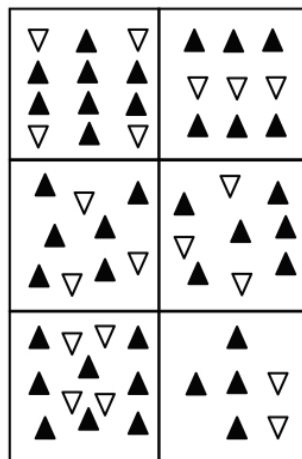
## Triangles

Triangles can also point, so if you see several triangles be on alert.

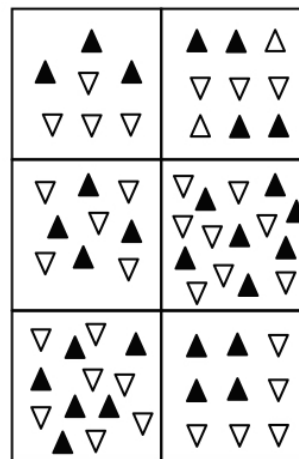
Triangles do not tend to point at objects as often as arrows do, but instead tend to point in a particular direction (e.g. up, down, right, left)

### Set 31 : Questions 141 - 145

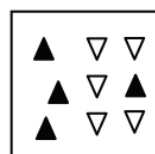
**SET A**



**SET B**

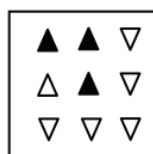


1



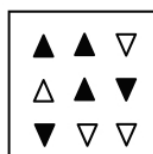
- A. Set A
- B. Set B
- C. Neither

2



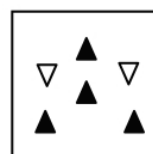
- A. Set A
- B. Set B
- C. Neither

3



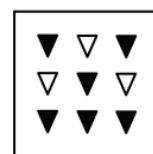
- A. Set A
- B. Set B
- C. Neither

4



- A. Set A
- B. Set B
- C. Neither

5



- A. Set A
- B. Set B
- C. Neither

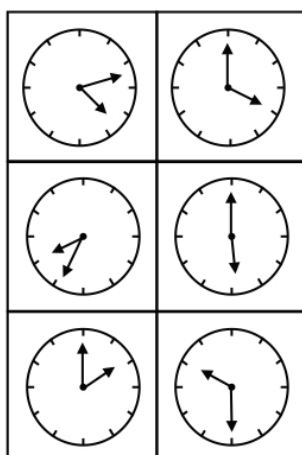


# Clocks

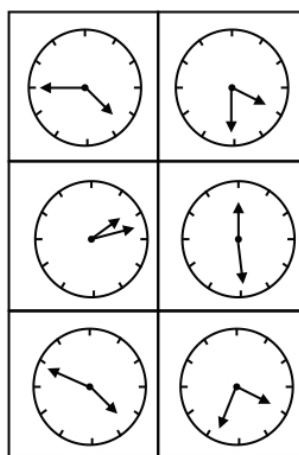
Clocks can come up from time to time. Many candidates fall into the trap of reading the time of the clock. However, UKCAT Clocks do not tell the time. Instead, they are just shapes, so you should be considering factors such as the **angles** between hands.

## Set 32 : Questions 146 - 150

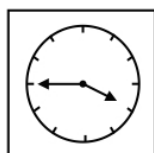
SET A



SET B

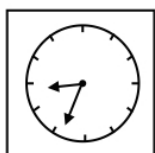


1



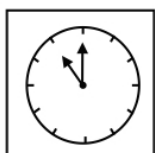
- A. Set A
- B. Set B
- C. Neither

2



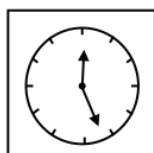
- A. Set A
- B. Set B
- C. Neither

3



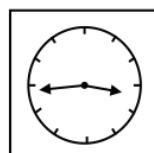
- A. Set A
- B. Set B
- C. Neither

4



- A. Set A
- B. Set B
- C. Neither

5



- A. Set A
- B. Set B
- C. Neither

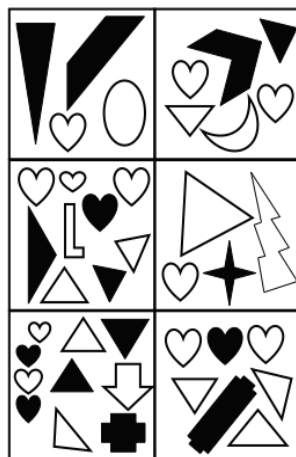
### Abstract Reasoning Distractors

In each set the UKCAT will place distractors to divert your attention from the correct pattern. You have to be careful, because these can often waste much of your time.

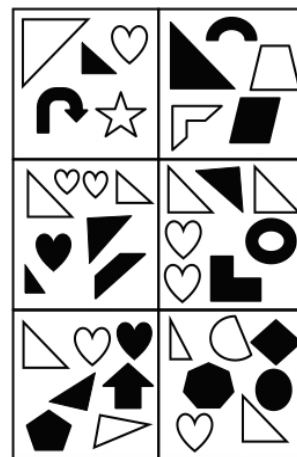
Distractors do not tend to be in every box, but can often be the most attention-drawing. That is why we encourage you to begin by looking at the first two boxes.

#### Set 33 : Questions 151 - 155

SET A



SET B



1



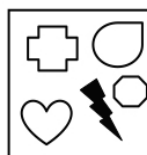
- A. Set A
- B. Set B
- C. Neither

2



- A. Set A
- B. Set B
- C. Neither

3



- A. Set A
- B. Set B
- C. Neither

4



- A. Set A
- B. Set B
- C. Neither

5



- A. Set A
- B. Set B
- C. Neither

## Spotting Distractors

How to spot distractors:

- If you see a shape in some, but not all, boxes in a particular set, then it is likely to be a distractor.
- The boxes with most shapes in a set are more likely to contain a distractor than boxes with the least shapes. That is why we teach you to start by looking at the simplest box.

### What can be a pattern?

**“Set A has two or three circles in each box”**

This cannot be the pattern in the UKCAT. Instead the pattern should be “Set A has at least two circles in each box”.

**“Set A has either a square or a crescent in each box”**

This pattern can work in the UKCAT.

**“If there is a star, it will be black”**

This **cannot** be the pattern in the UKCAT. If you took an empty box with no shapes, it would still satisfy this pattern. This is a good test to do incase you are confused during practice.

---

### Dependent Patterns

A dependency pattern is one which relies on another pattern:

**“There is either a star or circle. If there is a star, it will be black. If there is a circle, it will be white”**

This question can work in the UKCAT because the conditional pattern is a secondary pattern. If you took an empty box with no shapes, it does not satisfy the primary pattern so cannot fit into this set.

**“All the shapes are curved. If there is a star, it will be black”**

Again, the conditional pattern is a secondary pattern, so this can work.

### When do you look for a secondary pattern?

Once you spot a pattern, how do you know whether to look for a second?

- **Timing-** if you spot the pattern relatively quickly (within 20s), then it is worth spending another 10s looking for a second pattern
  - **Complexity of Pattern-** if the pattern you spot is very simple (e.g. 2 shapes in each box), then it is likely that there is a second pattern
  - **Colour Patterns-** colour patterns are often matched with a secondary pattern. Very rarely is a pattern just 'Set A has black shapes'. It may be something like 'Set A has an even number of black shapes'.
- 

### Finding a Semi-Pattern

If you cannot find the full pattern, even finding a half pattern can help you. When there is a simple primary pattern, and complex secondary pattern you may still score most marks by finding just one of the two patterns:

- Finding just the primary pattern may score you 2 marks out of 5
- Finding just the secondary pattern may score you 3 marks out of 5
- Finding both the primary and secondary pattern gives you marks 5 out of 5.

This is just an **example** of how marks could break down, assuming you do not make silly mistakes when assessing the test shapes.

For example, if your suspected pattern was 'Set A has a black triangle', and the actual pattern was 'Set A has a black triangle facing up', you would still score some marks.



### 1. Learn the Medic Mind Triggers

The Medic Mind triggers are listed in the 'Common Patterns' tutorial. With practice you will soon become very comfortable with these. They should cover most Abstract Reasoning patterns you can face.

Do not apply the same technique and same order of SPONCS to every single set. Some students use just one methodical technique for each question, looking for Shape first, then Position, then Orientation, and so on. This is a very inefficient technique to use, and instead you should use the Medic Mind triggers to look for a certain type of pattern first.

---

### 2. Start with the Simplest Box

Starting with the simplest box will help you avoid the distractors that they may throw at you on test day.

1. Take the simplest two boxes in Set A and the simplest box in Set B, and compare within and between sets.
2. Look for differences between sets and similarities within sets. And then expand out to look for the third simplest box in each Set.
3. Expand out to all boxes to confirm the pattern.

---

### 3. Very Difficult Patterns

A common trend in previous years is for the UKCAT to insert very difficult patterns that might take 3-4 minutes to work out. These questions are designed to trick you out:

- The stronger candidates will recognise that the pattern is difficult, and move on after 1 minute

- The weaker candidates will spend several minutes on this set, and waste much of their precious time. Often, it can be the most bright students who fall into this trap, because they are drilled into answering every question and often may be unwilling to move on.
- 

## 4. Do Not Fall Into The Trap of Counting

As we discussed in the 'Number Patterns' tutorial, many UKCAT candidates fall into the trap of counting the number of sides or number of shapes for every question. It can often be very time consuming to do this, so you should only count when you see sets with a small number of shapes.

From our UKCAT research, patterns relating to the number of shapes or sides tend not to have more than 6 or so shapes in each box.

**Think!** If you counted for every single pattern, you would at least spend 15 seconds per question. You are meant to spot the pattern in 30 seconds, so this is half your pattern spotting time for the whole section, for only 1 or 2 number patterns.

---

## 5. Avoid Distractors

Each set is likely to have unrelated and irrelevant shapes designed to waste your time.

Use the techniques in the 'Avoiding Distractors' tutorial to avoid these on Test Day.

---

## 6. Be Time Efficient for Type 2, 3, 4 Questions

- For Type 1 questions, spotting the pattern will help you answer 5 questions.
- For Type 2, 3 and 4 questions, spotting the pattern will help you answer 1 question.

Therefore you have to be careful not to spend too long on Type 2 to 4 questions. In the exam, because most questions are Type 1, your mindset is to spend 30 seconds per pattern and it can be hard to adjust for Type 2 to 4 questions.

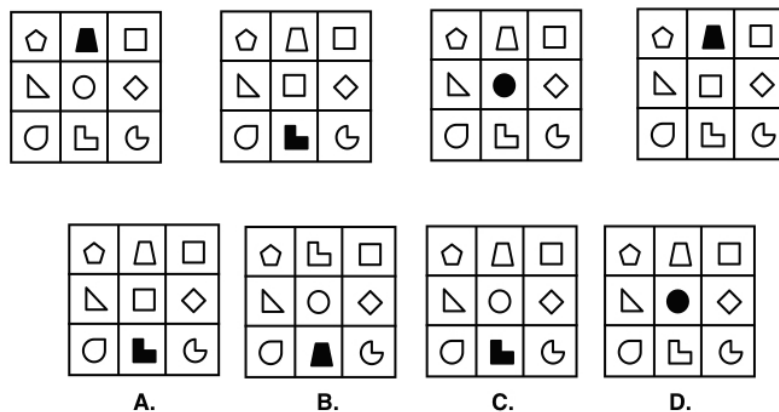
### Type 2 Questions

The majority of questions you face in the UKCAT are Type 1 questions. We will now focus on Type 2 - 4 questions which come up more sparsely.

In **Type 2 Questions** you get a sequence of 4 boxes and are asked to choose which test box (A to D) completes the sequence.

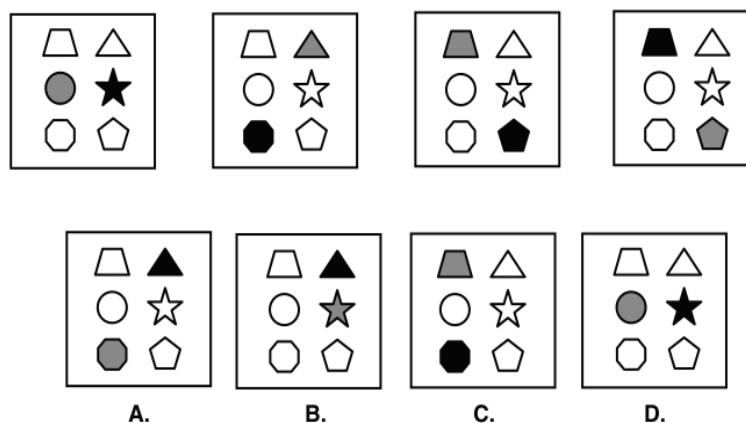
#### Set 34 : Question 156

Which of the following completes the sequence?



#### Set 35 : Question 157

Which of the following completes the sequence?





## Approach to Type 2 Questions

For Type 2 questions you need to select one feature and follow. Use this step-by-step approach:

1. Compare boxes 1 and 2, looking for the change between the boxes. If you struggle, look for the difference between boxes 2 and 3, or even boxes 3 and 4.
2. Confirm that the sequence works for all four boxes.
3. Eliminate the answer choices that do not match.
4. If you have one choice left, then there's your answer! If you have multiple choices left, you have to look again for a secondary pattern.

The key difference between Type 1 Questions is that you are searching for features of the shapes that **change** between the boxes, rather than the characteristics that **stay the same**.

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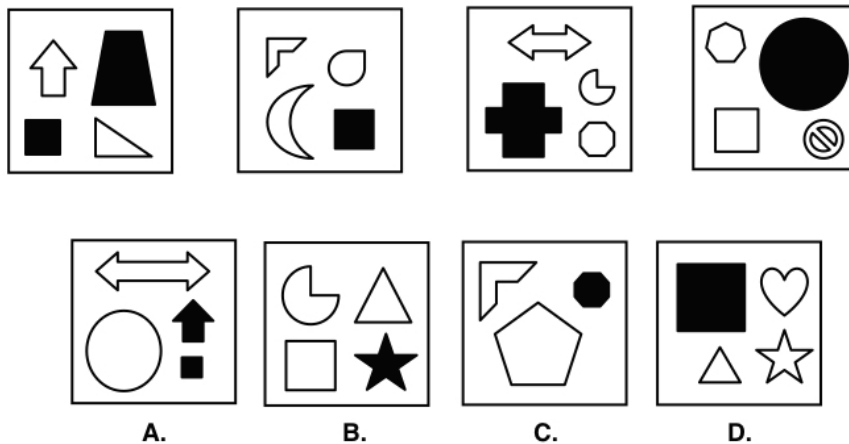
## Common Patterns: Type 2 Questions

The type of patterns that come up are very similar to those for Type 1 Questions. We will go through some of the most common Type 2 patterns.

Category	Common Patterns
Rotation	A shape might be rotated between each box in the sequence
Movement	A certain shape might move every time. For example, the black triangle might move clockwise every step.
Intersections or Segments	The number of intersections or segments might change along each step.
Shading variation	The shaded shape might change from step to step. For example, in box 1 the top left shape is shaded, then in box 2 the top right shape is shaded, and in box 3 the bottom right shape is shaded.

## Set 36 : Question 158

Which of the following completes the sequence?



### Multiple Patterns

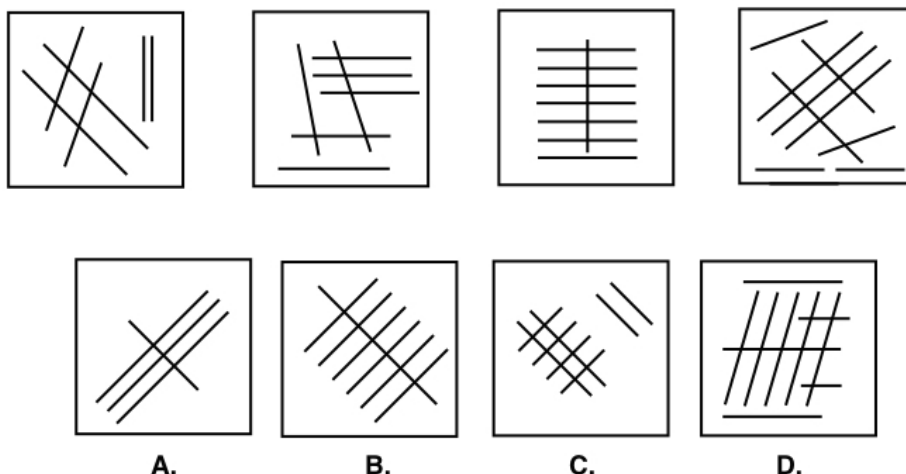
Sometimes there can be more than one change along the sequence. For example, the black triangle always rotates 90 degrees, and the circle alternates colour from black to white. Let's imagine a scenario where you are doing a question with that particular pattern:

1. You compare box 1 and 2, and realise the circle changes colour from white to black. You confirm this change continues (alternating colours) until box 4.
2. Box 4 has a black circle, so the answer box should have a white circle. You can knock out A and D.
3. You are now split between B and C, so look back for another pattern. You spot that the triangle rotates 90 degrees.
4. Knock out B, and select C as your answer.

You might spot both patterns at first, but if you only spot one don't spend too much time searching for another. Eliminating based on the first pattern could lead you directly to the answer, and save you looking for a secondary pattern which may not be there

## Set 37 : Question 159

Which of the following completes the sequence?



## Timing for Type 2 Questions

Type 1 Question	Type 2 Questions
1 pattern	1 pattern
5 questions	1 questions
1 minute per pattern	14 seconds per pattern

## Medic Mind Tips: Type 2 Questions

- Focus closely on adjacent boxes - there is no use comparing box 1 to box 4.
- Once you have found the sequence, focus on the important information only. If you know the black triangle rotates in each step, then work out what orientation it should be in the correct shape, and knock out the ones which don't have them.
- Do not overthink these questions. You should work out each pattern in 14 seconds, so it is less likely that there will be secondary patterns.

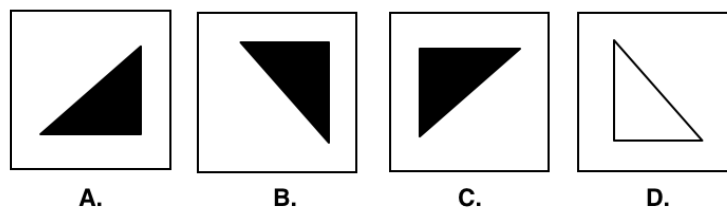
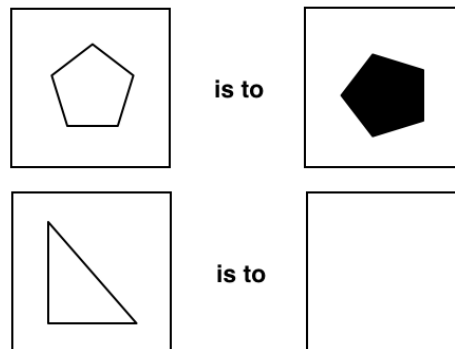
### Type 3 Questions

In Type 3 questions you have boxes matched in pairs. They give you two boxes with a link, and you have to identify the link between 1 and 2.

You then have to select the answer (box 4) which will continue the same link from box 3.

#### Set 38 : Question 160

Which of the following completes the sequence?



## Approach to Type 3 Questions

You only need to look at box 1 and 2 to find the pattern. Here is the step-by-step method:

1. Compare box 1 and 2, looking for the pattern change between both.
  2. Apply this change to box 3.
  3. Select the test shape that would fit box 4.
- 

## Common Patterns: Type 3 Questions

The common patterns for Type 3 questions are very similar to Type 2 questions. To remind you, we considered the following patterns for Type 2 questions:

- Rotation
- Movement
- Intersections / Segments
- Shading variation

### Position, Size and Colour

In Type 3 they might make the adjustment slightly harder to spot. Let's consider some more difficult patterns that could come up:

Category	Common Patterns
Position	The shape might move between several layers - e.g. each shape moves back one layer, with the back layer coming to the front.
Size	There can be shapes inside of each other, and they can swap places. For example, the smallest shape can become the biggest shape, whilst the rest become one smaller.
Colour	Beyond just simple colours, they often involve spots and stripes. For example, the stripes can change direction from going right (and down) to going left (and down).

### Type 4 Questions

**Type 4 Questions** are nearly the same as Type 1 questions. You get Set A and Set B as normal, but the difference is that the 5 questions are structured differently.

For each question, they give you 5 boxes, and ask which of the 5 belongs in a particular set.

---

### Approach to Type 4 Questions

The approach is exactly the same as Type 1 patterns:

1. Find the two most basic boxes in Set A, and the two most basic boxes in Set B. Now compare them.
  2. Identify the pattern in A, and the pattern in B. Look for any secondary patterns.
  3. Answer the test questions
- 

### Timing for Type 4 Questions

As we said above, the approach is exactly the same. But you will find Type 4 questions more time pressurising.

In Type 4 questions, you have to look at 5 boxes for each sub-question, and this is much more laborious. Therefore you have even less time to spot the pattern. We recommend 30 seconds for the pattern, and 30 seconds for questions (compared to 40:20 for Type 1).



### When will this section be?

Abstract Reasoning is the third section on test day. The first two sections, Verbal Reasoning and Quantitative Reasoning, are very taxing so take a break before starting Abstract Reasoning.

Also bear in mind that this section is much shorter than the first two, so re-adjust your timing for this.

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### What will I get in the test?

- **Whiteboard** - as with the other questions you should label the questions based on whether they were a complete guess (G) or you were unsure (U). Base this on the patterns, but if you have a pattern which you worked out but you were stuck on one of the sub-questions, perhaps label this (Q). In addition, you may want to write out the 6 categories for patterns on your board before you start.
  - **Flag Function** - you can mark the question to re-visit after. Again, refer back to Timing Tips for guidance on how to optimise this feature.
- 

### Preparing for Abstract Reasoning

#### 4 weeks to go - Consolidating Techniques

For Abstract Reasoning, you cannot just sit and learn theory without doing questions. You should work through the examples in this workbook, and then practice questions with our pattern table on the side. Really hone in on each particular pattern, and how to spot it.

#### 3 weeks to go - Practicing Questions Using Triggers

Whilst you practice questions, focus on getting the right triggers. See the 'Tips from Experts' tutorial for a summary of the triggers for test day. With Abstract Reasoning, during your practice you should come across every possible testable pattern. You might start off with poor scores, but you will definitely improve - alongside Verbal Reasoning, students show the greatest improvement in Abstract Reasoning. Focus mainly on Type 1 Questions.



## **2.5 weeks to go - Focus on Timing**

By this stage you should be more accustomed to spotting patterns. It is time to step up the timing. Work on spotting the pattern in 40 seconds for Type 1 Questions, 30 seconds for Type 4 questions, and 12 seconds for Type 2 and 3 questions.

## **1.5 weeks to go - Revisit Theory**

Use the online tutorials and course booklet to re-visit theory before course day. You should be using the Pattern Table throughout your revision, but it is now time to read the whole course booklet for Abstract Reasoning again.

## **1 week to go - Building Your Concentration**

Practice several Abstract Reasoning mocks back to back to develop your concentration skills for test day.

## **3 days to go - Adapt to Test Conditions**

As we described in detail in 'Verbal Reasoning - Test Conditions', you should replicate the exact test day with a whiteboard and an on-screen test. You should not be doing your mocks using the Pattern table now, but remember you can write down the main pattern categories (SPONCS) on your whiteboard.

## **1 day to go - Consolidate and Relax**

Consolidate the techniques by scanning through the Abstract Reasoning tutorials. And then relax!

## **Test Day - Read the Pattern Table**

On the day of the test you should just flick through the pattern table once more, and you should be ready for the test!



### 1. Patterns Will Repeat During Practice

“By the time you do the UKCAT you will have seen every possible pattern at least once”

When you do your first Abstract Reasoning test, it is very difficult to do well because you have no past experience. By the time of the test, you should have seen all the possible patterns once, if not several, times. This emphasises the importance of practice for Abstract Reasoning.

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### 2. All Patterns Can Be Spotted Using SPONCS

“It helped a lot using a table summarising all possible patterns, because it continually reminds you of what you need to be looking for”

We recommend using the pattern table every time you do an Abstract Reasoning passage. Throughout our years of UKCAT research, we have found all the common patterns and fit them into this table for you. Of course, you will get the odd pattern here or there which goes beyond the table, but it covers most of what you will face.

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### 3. Beware of the Abstract Reasoning Timing Traps

“Abstract Reasoning was the most trickiest section in terms of timing. It is such a short section, so you need to adapt quickly, and Type 2 and 3 questions throw you off”

- Firstly, Abstract Reasoning is the shortest UKCAT section, at 13 minutes long. It can come and go in a flash, and you need to adjust your timing to work quickly.
- Secondly, confusingly you have to adjust the timing per pattern during the section (e.g. between Type 1 and 2 questions), so do not fall into the trap of spending too much time on non-Type 1 questions.
- Thirdly, they will plant some extremely difficult sets to trap you. The better candidates will move on after 1 minute, rather than spend 3 minutes on a pattern. Consider it like this - if you spend 3 minutes on a single pattern, you have used nearly 25% of your time.



### Lesson 1: Introduction to Abstract Reasoning

#### Timing

- 13 minutes
- 55 questions
- 11 Sets of 5\*
- 70 seconds per set

#### Different Question Types

- Type 1
- Type 2
- Type 3
- Type 4

*\* Type 2 and 3 Questions still come in sets of 5, even though each pattern is different.*

#### Key Tips

- Do not look at the test shapes before the Sets
- Find the pattern for Set A and B first, and then answer the Test Shapes. Do not try to match the test shapes to similar-looking boxes in the Sets (only as a last resort).

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### Lesson 2: Question Types

#### Timing

- **Type 1 question** - Set A and Set B, with five associated test shapes, one test shape for each question
- **Type 2 question** - sequence of 4 shapes, with a continuing pattern. You have to select the fifth shape to complete the sequence.
- **Type 3 question** - sequence of 2 shapes (boxes 1 to 2), and you have to apply the same transition to box 3 to find the correct box 4.
- **Type 4 question** - Set A and B, with four associated test shapes per question.

## Lesson 3: Type 1 Questions

### Answering the Questions

- The pattern in Set A is normally the inverse of the pattern in Set B
- The answer is A if the test shape fits into Set A, B if it fits into Set B, and C if it fits into both or neither sets.

### Step by Step Technique

1. Find the two simplest boxes in Set A, and the two simplest boxes in Set B. Compare within and between both sets.
2. Identify the pattern in A and B, and look for any secondary patterns.
3. Answer the test questions.

You can look for the pattern in Set A first, and then for the pattern in Set B. For example, if each box in A has one triangle and one star, you will only spot this by comparing many boxes in A.

You can also look for the patterns in Set A and B together. For example, if Set A has an even number of shapes and Set B an odd number of shapes, you will more likely spot this by comparing boxes in both sets.

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## Lesson 4: Common Patterns

Use SPONCS to spot the pattern:

- Shape
- Position
- Orientation
- Number
- Colour
- Size

Refer to the tutorial to see the Pattern Table.



## Lesson 5: Number Patterns

- You have to match a **Quantity** (specific number, odd or even, relative number, multiples) with a **Characteristic** (shape, colour, position, sides).
  - For example, matching **relative number** and **colour** could give you the pattern 'Set A has double the number of white shapes than black, and Set B has double the number of black shapes than white'.
  - Do not fall into the trap of counting. The **trigger** for counting is if you see a small number of shapes - only then is it worth counting.
  - When you see many lines and overlaps, count for intersections, segments or regions.
- 

## Lesson 6: Shape Patterns

Shape patterns to look out for:

- Symmetrical vs. Asymmetrical
- Curved vs. Straight Sides
- Concave vs. Convex Shapes
- Right vs. Acute Angles
- Regular vs. Irregular
- x-sided vs. y-sided

**Triggers** include:

- If you see many circles alongside odd shapes, such as the crescent moon, think about curved vs. straight sides
- If you see many triangles, think about right angle vs. isosceles triangles.

For numbers of sides you should be wary not to count on every question. Also, there may be complicated patterns - e.g. 'In Set A there are 10 sides in total but the black shapes count as double, in Set B there are 10 sides in total but the white shapes count as double'.

## Lesson 7: Size Patterns

- A size pattern might be about the orientation or colour of the big and small shapes.
  - The **trigger** for size patterns should be if you see a very large and small shape in at least one box in each set
  - In most boxes the difference in size might be minimal, but there should always be at least one box with a big size difference to give you a hint.
- 

## Lesson 8: Positioning Patterns

Position patterns to look out for:

1. Particular shape in a box quadrant (e.g. top left)
2. Rotation of shapes
3. Arrangement by feature (e.g. big shape above small)
4. Close position of two shapes (e.g. triangle always next to circle)
5. Relative position of two shapes (e.g. triangle to left of circle)

The trigger for the last two patterns, close position or relative position, should be if you see many similar shapes in every box. For example, some sets have the same 9 shapes in each box arranged differently in each Set.

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## Lesson 9: Colour Patterns

- Colour patterns often involve the combination of colour with another feature. For example, combining Colour and Position: 'In Set A the black shapes are in the the top half of the box'.
- A strong trigger for colour patterns should be if you see spotted, striped and grey shapes. The UKCAT normally only uses these if it has to, and this hints strongly at a colour pattern.

## Lesson 10: Orientation Patterns

- A trigger for orientation patterns is if you see many arrows or triangles.
  - If you see many **arrows** then your first instinct should be to look for an orientation pattern. They can point in a direction (e.g. up or down) or at a particular shape (e.g. at a square).
  - **Triangles** can also point, but they tend to just point in a direction, not at a particular shape.
  - Clocks do not tell the time in the UKCAT. You should look at the angles between the hands for clues for a pattern.
- 

## Lesson 11: Distractors

- Abstract Reasoning is filled with distractors, which are shapes designed to waste your time by focusing your attention away from the pattern
  - Looking at the simplest box first will help you avoid distractors on test day
  - If a shape is in a few but not all boxes in a set, it is likely to be a distractor.
- 

## Lesson 12: Dependent Patterns

A dependent pattern is one which relies on a condition being true. For example, 'In Set A each box has a triangle. If the triangle is black, it is facing up, and if the triangle is white, it is facing down'.

Feasible Pattern	Impossible Pattern
"Set A has 2 or 3 circles in each box"	"Set A has at least 2 circles in each box"
"If there is a star, it will be black"	"Set A has either a white circle or a black star in each box"

## Lesson 13: Secondary Patterns

- Some sets have more than one pattern. These can be time consuming on test day.
  - Look for a secondary pattern if:
    - You spot the first pattern quickly
    - The pattern you spot is very simple
    - You found a simple colour pattern, as these often have secondary patterns.
  - Even if you cannot find the full primary pattern, you can often get at least 3 out of the 5 questions right by finding a **partial pattern**. For example, if your pattern was 'Set A has curved shapes', and the actual pattern was 'Set A has an even number of curved shapes', you can still get some marks.
- 

## Lesson 14: Timings Strategies

1. **Use the Medic Mind Triggers-** keep using the Pattern Table to help you identify triggers on test day.
2. **Start with the simplest box -** this helps you avoid distractors.
3. **Be wary of very difficult patterns-** some patterns are especially difficult, and are designed to waste your time. Be strict and move on after 1 minute.
4. **Avoid the trap of counting-** as tempting as it is, counting for every question will doom you in the UKCAT. You should only count if you see the trigger for it, which is if you see very few shapes.
5. **Avoid distractors-** use the techniques in Lesson 11 to help avoid these.
6. **Be efficient for Type 2, 3, 4 questions-** you should only spend 14 seconds per pattern for these.

## Lesson 15: Type 2 Sequence Questions

- In Type 2 questions you get a sequence of 4 boxes, and have to choose the test shape which fits as the 5th box.
  - You are looking for a changing pattern along the sequence. Once you find a pattern, eliminate wrong answer choices. If you are left with more than 1, then look for another pattern
  - Common sequence patterns can be related to rotation, movement, intersections / segments, and shading variation.
  - You should only spend 14 seconds per pattern.
- 

## Lesson 16: Type 3 Pairing Questions

- In Type 3 questions you have a pair of boxes with a transition from box 1 to 2. You have to apply the same transition to box 3 to select the correct box 4.
  - The approach for Type 3 questions is very similar to that for Type 2 questions.
  - Common patterns are associated with position, size and colour, in addition to the patterns from Type 2 questions
  - You should only spend 14 seconds per pattern.
- 

## Lesson 17: Type 4 Questions

- Type 4 questions are essentially the same as Type 1, except that the questions take a different form.
- Each question gives four test shapes, and asks you to pick which test shape is in a specified set.
- Type 4 questions are even more time pressured than Type 1, so spend 30s for the pattern and 30s for questions.





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## Lesson 18: Abstract Reasoning - Test Day

- In Type 2 questions you get a sequence of 4 boxes, and have to choose the test shape which is the 5th box

### Week by Week Plan

- **4 weeks to go**- consolidate techniques by reading through the course booklet and example questions
- **3 weeks to go**- practice questions and adapt the theories you learnt. Timing not essential to begin with, just focus on applying the correct theory. Focus mainly on Type 1 Questions.
- **2.5 weeks to go** - begin working on timing by doing mini-mocks under test conditions. Bring in Type 2, 3 and 4 questions.
- **2 weeks to go**- work on full mocks to develop your skills for the last run. Use the Pattern Book whilst you do each mock.
- **1.5 weeks to go**- revisit the theory taught using the course booklet and online videos
- **1 week to go** - practice several Abstract Reasoning mocks back to back to develop your concentration skills for test day.
- **3 days to go** - adapt to test conditions by replicating the conditions. Do a mock in your local library using an old computer and a whiteboard. You should no longer use the Pattern Table during mocks.
- **1 day to go** - consolidate the techniques briefly and then relax!
- **Test day** - read the Pattern Table before the test to trigger your mind. Good luck!

---

## Lesson 19: Tips from the Experts

1. **Patterns Repeat-** between now and Test Day, you will come across every pattern possible at least once. Therefore stay calm and do lots of practice.
2. **Use SPONCS for all patterns-** use the list of triggers and pattern table to save you time.
3. **Beware of timing traps-** Abstract Reasoning is the shortest section, and has variation in timing per question (Type 1 vs. Type 2), which can easily confuse you. Be on alert to manage timing well, and avoid wasting too much time on very difficult patterns designed to trick you.

### Set 1

**Pattern:** Set A has one more black shape than white shape. Set B has one more white shape than black shape.

**Method:** This is a warm-up question, so you may have approached it in a unique way. The best thing to do here is compare the simplest box in Set A, box 2, and the simplest box in Set B, box 3. They both have 3 shapes, and the only difference is the number of black / white shapes. You suspect a Colour Pattern, so compare boxes 1 and 2 in Set A, and you can see that both boxes have two black shapes. Looking through the rest of the boxes you can see that the pattern isn't just '2 black shapes in Set A', but instead 'One more black shape than white shape'. The inverse applies for Set B.

1. **B** - there are two black shapes, and three white shapes, which fits Set B.
2. **C** - you might be inclined to choose B for this because there are more white shapes, but remember the full pattern dictates that there is only one more white shape than black shapes.
3. **C** - there are 4 more white shapes here. Do not waste time counting everything, if you count one quadrant you see that there is one more white circle than black circle in each quadrant.
4. **A** - there are five black shapes, and four white shapes, which fits Set A.
5. **C** - there is an equal number of black and white shapes, which fits neither sets.

### Set 2

**Pattern:** Both Sets have two types of shape in each box, with similar shapes opposite. In Set A, if there are any black shapes the shape is a plus. In Set B, if there are any white shapes the shape is a plus. The crosses are always made up of just one colour, white in Set A, black in Set B.

**Method:** Before fixating on the small shapes making up each cross or plus, take a step back and look at the boxes as a whole. You can see that the crosses are always black in Set B and white in Set A. Use this as a basis to work out the full pattern without having to waste much time on looking at specific shapes.

1. **C** - the cross is made up of two colours, which does not fit either set.
2. **C** - this fits both sets, because there are black shapes in the plus (to fit A) and white shapes in the plus (to fit B). Therefore the answer is C.
3. **B** - a black cross fits in with the pattern in Set B.
4. **B** - the white shapes in the plus fit the Set B pattern, and unlike question 2 there are no black shapes present.
5. **A** - a white cross fits in with the pattern in Set A.



## Set 3

**Pattern:** The number of shapes increases by one in each step, with the new shape introduced being shaded black.

**Answer:** D

**Method:** There are very few shapes present, so you should be triggered to look for number. This is a very simple UKCAT pattern.

## Set 4

**Pattern:** The white shape is rotated 90 degrees anticlockwise, and turns black.

**Answer:** A

**Method:** The two shapes are the same, apart from Colour and Position. Be careful to get the rotation in the right direction, anti-clockwise.

## Set 5

**Pattern:** In Set A there is a big black circle with a straight edged shape inside. In Set B there is a big black square with a curved edged shape inside.

**Method:** It should be relatively easy to spot the primary pattern (big black circle in A, big black square in B). But look closely to the shapes inside, and you can also spot the secondary pattern.

1. D - to fit into Set A you need there to be a straight-edged shape inside, which D satisfies.
2. C - to fit into Set B you need there to be a curved-edged shape inside, which C satisfies.
3. D - to fit into Set B you need there to be a curved-edged shape inside, which D satisfies. Be careful not to be tricked by option A which has the inverse colour scheme.

## Set 6

**Pattern:** In Set A there are black shapes. In Set B there are white shapes.

**Method:** For this question you should be able to spot the pattern relatively easily by looking at the sets as a whole. There would normally be a secondary pattern because this pattern is too simple, but this is just a warm-up question so there is no secondary pattern.

1. C - there is both a white and black shape, which fits neither set
2. C - there is both a white and black shape, which fits neither set

3. A - there are two black shapes
4. B - there are three white shapes
5. A - there is one black shape

## Set 7

**Pattern:** In Set A there is always one large black circle. In Set B there is always one large white triangle.

**Method:** Comparing the simplest two boxes in Set A, boxes 1 and 2, you can see that both have a black circle and one extra shape. Checking with other boxes in Set A you can see that the black circle is a common feature. Similarly, Box 4 and 5 in Set B show you that a white triangle is common in this set.

1. A - a black circle is present
2. C - only a white circle is present and no triangles
3. A - a black circle is present (fits Set A), and the triangle is black (contradicts Set B)
4. B - a white triangle is present
5. C - both a black circle and white triangle are present, so this satisfies both sets and is therefore C.

## Set 8

**Pattern:** Set A is made up of just quadrilaterals (4-sided shapes). Set B is made up of just triangles.

**Method:** This should again be a simple pattern to spot, and there would normally be a secondary pattern associated with a feature such as Colour or Shape (e.g. isosceles vs. right angled triangle). There is no secondary pattern on this occasion.

1. A - a quadrilateral fits Set A
2. C - there is both a triangle and quadrilateral, so this fits both sets and is hence C
3. B - triangles are present, which fits Set B
4. C - even though two quadrilaterals are present, the two circles mean that this cannot fit into Set A.
5. A - there are four quadrilaterals, which fits Set A.

## Set 9

**Pattern:** Set A has one shape. Set B has four shapes.

**Method:** This is a basic counting pattern - remember, when you see very few shapes it can be worth counting.

1. C - there are two shapes, so this fits neither.
2. B - there are four shapes, fitting Set B.



3. B - there are four shapes, fitting Set B.
4. A - there is one shape, fitting Set A
5. A - there is one shape, fitting Set A

## Set 10

**Pattern:** Set A has an even number of shapes, Set B has an odd number of shapes.

**Method:** As we will learn later, when you see only a few shapes it is worth counting. Counting shows us that Set A has an even number of shapes, and Set B has an odd number. Colour is a distractor here. Note that in Set B there are two boxes (3 and 6) with only one shape, which is a good hint that there could be something to do with an odd number of shapes.

1. B - there are 3 shapes, which fits Set B.
2. B - there is one shape, which fits Set B.
3. A - there are two shapes, which fits Set A.
4. B - there are five shapes, which fits Set B.
5. A - there are two shapes, which fits Set A.

## Set 11

**Pattern:** Set A has regular shapes, Set B has irregular shapes.

**Method:** There are very few shapes. Number isn't relevant here; there is one shape in every box except box 3 in Set A. Colour is sparse and seems irrelevant. When you only have limited shapes and the pattern isn't to do with number or colour, compare the shapes closely. By taking a step back and looking at the Set as a whole, you can see that the shapes in Set B tend to be more disjointed, pointed and less symmetrical in general - they are irregular shapes.

1. A - the pentagon is a regular shape, which fits Set A.
2. B - this blob is an irregular shape, which fits Set B.
3. B - this blob is an irregular shape, which fits Set B.
4. A - there are two irregular shapes, which fits Set B.
5. B - the hook shape is irregular, which fits Set B.

## Set 12

**Pattern:** Set A has shapes with an odd number of sides. Set B has shapes with an even number of sides.

**Method:** There are relatively few shapes. Colour is again sparse and seems irrelevant. Consider Number - checking first for the number of shapes. This brings you nothing, so look at the number of sides. By comparing the simplest two boxes in Set A, 1 and 2, and the simplest boxes in Set B, 2 and 4, you can spot that Set A shapes have an odd number

of sides, and Set B have an even number of sides. Be careful, because we are not looking at the total number of sides in the box, as some patterns do, but instead the number of sides for each individual shape.

1. B - the crescent moons have two sides each, which fits Set B.
2. C - the quadrilaterals have four sides, but the circle has one side, so this box fits neither sets.
3. A - the triangles have three sides each, which fits Set A.
4. A - the shape has three sides, which fits Set A.
5. B - the rectangles have four sides each, which fits Set B.

## Set 13

**Pattern:** Set A has two squares for every one triangle. Set B has two squares for every one circle.

**Method:** There are many shapes, so look for arrangement patterns first. After a brief look, it is difficult to find one. Now look at a shape pattern, and from just looking at Set A as a whole you can see that there are many square. Box 3 in Set A should be a good indicator. Check and compare with Set B to find the overall pattern.

1. C - two squares for one triangle (Set A) and one circle (Set B), so fits both.
2. B - two squares for one circle.
3. B - two squares for one circle.
4. A - two squares for one triangle
5. C - only one square

## Set 14

**Pattern:** Set A has an even number of intersections. Set B has an odd number of intersections.

**Method:** When you see overlapping shapes, it is your trigger to count the number of regions and intersections. Compare the simplest boxes, box 6 in Set A and box 6 in Set B. Both have one region, so it is unlikely to be regions, but there is a difference in number of intersections. More counting and comparing with other boxes will lead you to the pattern.

1. A - 4 intersections
2. A - 2 intersections
3. B - 5 intersections. 3 lines converging in the centre count as 1 point of intersection, not 2.
4. A - 0 intersections, and zero by definition is an even number. One might argue that the two vertexes are intersections, which could be the case, but the answer remains as A.
5. A - 2 intersections

## Set 15



**Pattern:** Both sets have more white circles than black circles. In Set A, there are more black circles on the right half of the box than left. In Set B, there are more black circles in the top half than bottom.

**Method:** This is a question which has a trap. Most UKCAT candidates would count every single circle in each box and try to find a pattern this way, whether it be odd / even or another number pattern. However, you should only do this as a last resort. Simply by looking at the boxes you can tell by inspection that there are more white circles. Also remember, when you see many similar shapes think of a Position Pattern. The only variation is colour, so look for the position of different colours, and you might spot that there are more black circles on the right hand side of the boxes in Set A, and more in the top half of boxes in Set B.

1. C - the answer choices might require some precise counting. For this box there are more black circles in the top half (vs. bottom) and right half (vs. left), which fits both sets/
2. C - again this fits into both sets, so the answer is C.
3. C - yet again this fits both sets, the answer is C.
4. A - there are more black circles in the right half and bottom half.
5. C - there are more black circles in the top half and right half.

Tip: This is a question you may want to skip in test day. It is designed to waste your time, and very few candidates will spot the correct pattern.

## Set 16

**Pattern:** Set A has an odd number of shapes, and more unshaded than shaded. Set B has an even number of shapes which are all shaded.

**Method:** Look at the simplest boxes in Set A, boxes 4 and 5, and notice they both only have 1 shape, which is a huge hint towards an odd vs. even pattern. From looking at Set B you straight away notice they are all black, and it is relatively easy to spot that they are all even numbered. Because there is a colour pattern in Set B, as well as the number pattern, don't forget to look for the colour pattern in Set A.

1. C - odd number, all shaded.
2. A - odd number, all unshaded.
3. A - odd number, all unshaded.
4. A - odd number, all unshaded
5. C - odd number, all shaded

## Set 17

**Pattern:** Set A has convex shapes. Set B has concave shapes.



**Method:** It is unlikely to be a Number pattern because there are 1 or 2 shapes per box across both sets. It is not a Colour pattern as there are just white shapes. Therefore look closely at Shape. Comparing the simplest boxes, Box 1 in Set A and Box 6 in Set B, you notice that while they are both curved, but one is convex whilst the other concave.

1. A - the triangle is convex.
2. B - the blob is concave. If you are unsure, use the sets as reference - the star appears in Set B as being a concave shape in Box 2.
3. A - this shape is convex.
4. A - these shapes are both convex.
5. C - the clouds are concave, but the triangle is convex.

## Set 18

**Pattern:** Set A has a vertical line of symmetry down the middle. Set B has a horizontal line of symmetry down the middle.

**Method:** When you see many similar shapes be on the lookout for a Position, Shape or Colour Pattern. There isn't a colour pattern present, but looking closely we can see that there is a combination of Shape and Position - in Set A there is a vertical line of symmetry, and in Set B a horizontal line of symmetry. Box 2 in Set B should be a good trigger, because it hints towards symmetry due to the rotation of the heart.

1. C - there is only a diagonal line of symmetry in this test shape.
2. B - there is only a horizontal line of symmetry, which fits Set B.
3. C - there are both horizontal and vertical lines of symmetry.
4. B - there is only a horizontal line of symmetry, which fits Set B.
5. A - there is only a vertical line of symmetry, which fits Set A.

**Medic Mind Tip:** Notice that box 5 in Set B also happens to fit into Set A because the vertical line of the symmetry. If it was a test shape, it would fit into both so the answer would be C. This shows that just because a test shape is a direct match to a Set box, it doesn't mean the answer is as simple as you might think!

## Set 19

**Pattern:** In Set A the number of sides adds up to 10, but black sides count as double. In Set B the number of sides adds up to 8, but white counts as double.

**Method:** This is another question which can be a timing trap in the UKCAT. The pattern itself is very difficult to spot, and may seem impossible at the start of your UKCAT revision. However, this particular pattern comes up from time to time, so by test day you should hopefully be on the look out for it. As a general rule, when you count number of sides look out for a combination with colour.

1. C - the shape has 3 sides, so would not work for either set.
2. B - applying the Set A rules would give you a total of 8 sides, and applying the Set B rules would give you a total of 13 sides. Neither work.



3. A - applying the Set A rules gives us our desired total of 10 sides. Applying the Set B rules would only give 6 sides. It only works for A.
4. A - applying the Set A rules gives us our desired total of 10 sides. Applying the Set B rules would give 17 sides. It only works for A.
5. B - applying the Set A rules gives us 16 sides. Applying the Set B rules gives us our desired total of 8 sides. It only works for B.

## Set 20

**Pattern:** Set A has isosceles triangles, Set B has right angled triangles.

**Method:** When you see lots of triangles you should be on alert for either an orientation pattern or one relating to isosceles vs. right angled triangles. This is again a pattern which might seem difficult to spot at first, but with more UKCAT practice you will become familiar with it.

1. A - there is one isosceles triangle
2. B - there are three right angle triangles
3. C - there is one isosceles triangle and four right angled triangles
4. A - there are three isosceles triangles
5. C - there are no triangles

## Set 21

**Pattern:** Set A has curved edge shapes. Set B has straight edged shapes.

**Method:** Comparing the simplest boxes, Box 2 in Set A and Box 2 in Set B, it should put you on the right trail. In general, when you see odd shapes such as the crescent moon or a curved arrow, suspect a 'Straight vs. Curved' pattern - they cannot use only circles to represent curved shapes, so often resort to unusual shapes such as the moon.

1. C - there is a mixture of straight and curved edged shapes
2. B - there are two straight edged shapes
3. A - there are two curved edged shapes
4. C - there is a mixture of straight and curved edged shapes
5. B - there are three straight edged shapes

## Set 22

**Pattern:** In Set A the total number of enclosed regions is odd, and any overlapping regions that have straight sides are shaded. In Set B, the total number of enclosed regions is even and any regions with at least one curved boundary arc are shaded

**Method:** When you see overlapping regions you should think immediately about the number of regions or intersections. Counting the regions in Set A, you can spot that there

is an odd number of regions. Looking for the inverse in Set B, you can see that there is an even number of regions in Set B. The secondary pattern is harder to spot, but when you see some overlapping regions shaded and some unshaded, consider the nature of the overlap - is it curved or straight, or does it involve two shapes or one shape? The former is the pattern is present here.

1. C - there is an even number of regions, but the circle should be shaded for this to fit into Set B
2. C - there is an even number of regions, but the overlap is curved so should be unshaded to fit into Set A
3. B - there is an even number of regions (four), and the overlap is curved and shaded.
4. A - there is an odd number of regions and no overlap.
5. A - there is an odd number of regions and no overlap.

## Set 23

**Pattern:** In both sets there is one big shape and one small shape. In Set A, the big shape is in the bottom half of the box, and in Set B the big shape is in the left half of the box.

**Method:** When you see a particularly large shape combined with a small shape in any of the boxes, you should be on alert for a Size Pattern. Comparing Box 1 in Set A with Box 1 in Set B, you can see that both boxes have a large shape next to a small one. Now find out whether the Size pattern is combined with Position (e.g. big shape above small) or Colour (e.g. big shape is black). On this occasion it is Position.

1. A - the big shape is in the bottom half
2. C - the big shape is in the top half and centre, which fits neither
3. B - the big shape is in the left half
4. C - the big shape is both in the left half and bottom half, so it fits both sets and is therefore C
5. A - the big shape is in the bottom half

## Set 24

**Pattern:** In both sets there is one big shape and one or two small shapes. In Set A, the big shape is black, and in Set B the big shape is white .

**Method:** As with Set 19, when you see a very big shape and small shape you should be triggered for a Size Pattern. In Set 19, Size was combined with Positioning, but here it is combined with Colour. By taking a step back and looking at the sets as a whole, the large black shapes in Set A and large white shapes in Set B stand out greatly.

1. A - the big shape is black
2. B - the big shape is white
3. A - the big shape is black
4. A - the big shape is black
5. C - the big shape is black, but there is no white small shape so this cannot fit into Set A.



## Set 25

**Pattern:** In Set A there is always a pie chart and circle adjacent to each other. In Set B there is always a diamond above a triangle

**Method:** When you see many similar shapes, you should be on alert for a Positioning pattern. This type of pattern is commonplace in the UKCAT - they have 9 shapes which move around between each box. The pattern is normally along the lines of 'Shape X is always next to Shape Y', or 'Shape X is always above Shape Y'. Compare two boxes in Set A, Box 1 and 2, looking closely for slight differences. You can see that a circle is always adjacent to a pie chart, and checking other boxes confirms this. Now closely compare two boxes in Set B, Box 1 and 2. You can see that a triangle is below a diamond in both boxes, and this applies for the whole Set.

1. A - a pie chart and circle are adjacent
2. A - a pie chart and circle are adjacent
3. B - a triangle is below a diamond
4. C - neither of the two rules applies
5. B - the circle is to the left of the pie chart, so this does not fit Set A in which the circle is always to the right. There is a triangle is below a diamond.

## Set 26

**Pattern:** In Set A the curved shapes are on the left hand side of the box, and straight shapes on the right, and additionally black shapes are on the top half. In Set B the curved shapes are on the right hand side of the box, and straight shapes on the left, and additionally white shapes are on the top half.

**Method:** When you look at these sets, you notice that there is often a quadrant left blank, which hints towards some sort of Positioning pattern. Again, spot the crescent moon and suspect a 'Curved vs. Straight' pattern. Comparing the boxes you are likely to spot the Colour Pattern first. Looking more closely, you will spot the second pattern to do with curved and straight shapes.

1. A - curved shapes are on the left half, and black shapes are on the top half
2. B - curved shapes are on the right half, and black shapes are on the bottom half
3. C - curved shapes are on the right half (fits B), and black shapes are on the top half (contradicts B)
4. C - curved shapes are on the left half (fits A), but there is no top / bottom split of black and white shapes (contradicts A)
5. B - curved shapes are on the right half, and black shapes are on the bottom half

**Tip:** This is an example of a Secondary Pattern. If you spotted just the Colour Pattern, you would still have chosen 4 out of 5 answer choices correctly. If you spotted just the Position / Shape Pattern, you would still have got chosen 3 out of 5 answer choices correctly. On Test Day do not spend too long looking for Secondary patterns if you are

running short of time, because they can be time consuming and you can still score most marks with just finding the Primary pattern.

## Set 27

**Pattern:** In Set A, there is an odd number of shapes, and the shapes are either white or grey. In Set B, there is an even number of shapes, and the shapes are either black or white.

**Method:** When you see a grey shape, you should be on alert for a Colour Pattern, because they only tend to branch out from black and white when a Colour Pattern is present. The same applies for dotted and striped shapes. As we have discussed before, when you see very few shapes it is worth counting, and it should lead you to the relatively simple odd / even pattern. The colour pattern is very simplistic for this particular question, so be careful not to spend too long looking for a more complex colour pattern.

1. A - there is one shape which is grey
2. C - there is one shape (fits A) but it is not white nor grey (contradicts A)
3. C - there are three shapes (fits A) but they are neither white nor grey (contradicts A)
4. B - there are four shapes which are white
5. A - there is one shape which is white

## Set 28

**Pattern:** In Set A there are twice as many black triangles as white triangles. In Set B there is one more white triangle than black triangles.

**Method:** When you see many similar shapes such as this, be on alert for a Positioning Pattern. However, on this occasion there is no such pattern. Spotting grey shapes you should be on alert for a Colour Pattern. Oddly, the grey shapes are a distractor here, and the answer lies in the relative number of black and white shapes. Notice that the pattern is not a complete inverse, as the relationship in Set A is to do with multiples, and in Set B is to do with differences in number.

1. A - there are twice as many black shapes
2. B - there is one more white shape than black shape
3. C - neither rule fits here
4. B - there is one more white shape than black shape
5. C - neither rule fits here

## Set 29

**Pattern:** In Set A, the arrow is pointing up if there is a white circle., and the arrow is shaded if there is a quadrilateral. In Set B, the arrow is pointing up if there is a black circle, and the arrow is shaded if there is a triangle.



**Method:** When you see many arrows you should think about the direction they point. Looking first at Set A, compare the boxes where the arrow points up and the boxes where it points down. Looking closely for differences you can spot that there is always a white circle when it points up. Now look to Set B, and you can see that there is always a black circle if the arrow points up. The secondary pattern is more difficult to spot, because you are unlikely to have time to look for it in the exam. However, to spot it you apply the same technique again as with direction. In general, when you look at the boxes half the arrows tend to be white and half tend to be black, half point up and half point down, so this hints that Colour and Orientation are important here.

1. C - the arrow points up and there is a black circle (fits B), but there is no triangle (contradicts B).
2. A - the arrow points up and there is a white circle, and there is no quadrilateral accompanying the unshaded arrow. This fits A.
3. C - there is a white circle so the arrow has to point up to fit into A. There is also a triangle so the arrow has to be shaded to fit into B.
4. B - the arrow points up and there is a black circle, and there is a triangle accompanying the shaded arrow. This fits B.
5. C - this might seem to fit perfectly into Set B, because the arrow is shaded due to the triangle. However, this box could also fit into Set A.

## Set 30

**Pattern:** In Set A there are always two arrows pointing up. In Set B there are always two arrows pointing right.

**Method:** When you see arrows immediately be on the alert for an Orientation pattern. There is normally a relationship between the direction the arrows point and another feature, but here the pattern is much more simpler.

1. C - there are two arrows pointing down, which fits neither set
2. C - there are no arrows
3. B - there are two arrows pointing right, which fits Set B
4. A - there are two arrows pointing up, which fits Set A
5. B - there are two arrows pointing right, which fits Set B. The two double facing arrows may confuse you, but they appear in Box 6 of Set B so this test shape can still fit into Set B.

## Set 31

**Pattern:** In Set A, there are twice as many black triangles pointing up as white triangles pointing down. In Set B, there is one less black triangle pointing up than triangles pointing down.



**Method:** When you see many triangles be on the alert for a Direction or Shape (isosceles vs. right-angled) pattern. Triangles can point, and here the pattern is associated with Colour and Orientation.

1. C - there are four triangles pointing up, and four pointing down, which fits neither set.
2. C - there are three triangles pointing up, and six triangles pointing down, which fits neither set.
3. C - there are five triangles pointing down, and four pointing up. However, one of the arrows pointing down is black, instead of white, so this does not fit either set.
4. A - there are four triangles pointing up, and two triangles pointing down, which fits Set A.
5. C - there are 9 triangles pointing down with a mixture of black and white. This does not fit either set.

## Set 32

**Pattern:** In Set A, the clockwise angle between the big hand and small hand is less than 180 degrees. In Set B, the clockwise angle between the big hand and small hand is greater than 180 degrees.

**Method:** When you see clocks, remember that they do not tell the time in the UKCAT. Instead focus on the angles between hands. From first appearance it might seem like the angle is always smaller than 90 degrees between the hands, but remember to count in the same direction and start from the same hand for both sets, and doing this shows you the pattern.

1. B - the clockwise angle is greater than 180 degrees.
2. A - the clockwise angle is smaller than 180 degrees.
3. B - the clockwise angle is greater than 180 degrees.
4. B - the clockwise angle is greater than 180 degrees.
5. B - the clockwise angle is greater than 180 degrees.

## Set 33

**Pattern:** In Set A, each box contains at least one triangle, and there is an equal number of hearts and triangles. In Set B, each box contains at least one right angle triangle, and the number of right angled triangles is one more than the number of hearts.

**Method:** There are many big and awkward shapes filling every box to the brim, so it is essential to choose the simplest boxes in each set. In Set A compare boxes 1 and 4 - they both have a triangle and heart. This fits for the rest of the set, and you can notice that there is always an equal number of both shapes. In Set B, there is always a right-angled triangle and one less heart.

1. A - there is one triangle and one heart
2. C - there is no heart (contradicts A), and the triangle is not right angled (contradicts B)



3. C - there is no heart (contradicts A) and no right angled triangle (contradicts B)
4. B - there are two right angled triangles and one heart, which fits Set B.
5. B - there is one right angled triangle and there is no heart, which fits Set B.

## Set 34

**Pattern:** The black shape moves up each time, and the centre shape alternates between a circle and square.

**Answer:** C

**Method:** Spot the first pattern - the black shape always moves up one. You can eliminate D based on this, as well as B because the bottom shape has changed. You cannot distinguish between A and C, so there must be a secondary pattern, and looking more closely you see that the central shape alternates. The centre shape should be a circle, so eliminate A and select C.

**Tip 1:** Finding one pattern and eliminating, and then looking for a second pattern if needed is the most time efficient method. There will be some questions with just one pattern, so this method avoids you wasting time looking for a second pattern when there isn't one!

**Tip 2:** With patterns such as these moving down beyond the realms of the table takes you back to the top. For example, from step 1 to 2 the black shape moves up one to the bottom of the table.

**Tip 3:** In three of the answer choices the black shape is in the middle bottom box. This is a hint that the correct answer contains a black shape in this position.

## Set 35

**Pattern:** The grey shape moves up and right one step, and then left the next step, and repeat. The black shape moves down and left one step, and then right next the next step, and repeat.

**Answer:** A

**Method:** The shapes stay constant, and a grey shape is present so it is very likely to be a colour pattern. Follow the movements of the colours, and you will find an odd yet consistent pattern of movement. If you work out the pattern for the grey shape first, you need it to move to the left to fill the bottom left shape. Therefore you can eliminate B, C and D, enabling you to reach your answer without having to even look at the black shape, thus saving you time.

## Set 36

**Pattern:** The big shape alternates between being straight and curved. There are 4 shapes per box.





**Answer:** D

**Method:** When you see many big and small shapes you should be on alert for a Size Pattern. Additionally, as we have said before the crescent moon can be a signal for a Curved vs. Straight Pattern. The theme of having very big shapes continues even in the test shapes, so it is almost definitely a Size Pattern. Everything else is a distractor. We need the test shape to have straight edges, but C does not work because there are only 3 shapes. D is the answer.

## Set 37

**Pattern:** The number of intersections and number of lines increases by one each time.

**Answer:** D

**Method:** When you see many lines and intersections you should be on alert for a Number Pattern related to the number of line segments and intersections. The first box begins with 6 lines and 4 intersections, and the last box has 9 lines and 7 intersections. The test shape needs 10 lines and 8 intersections, so only D fits.

## Set 38

**Pattern:** The smallest inner shape becomes the biggest outer shape, and the rest of the shapes shrink inwards.

**Answer:** A

**Method:** This type of pattern is commonplace for Type 3 questions, so should be easy to spot on test day after practice. Be careful not to get confused between A and C.